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*For the Library of  
The Royal College of Physicians of London  
from the Council of the College of Surgeons*  
DESCRIPTIVE CATALOGUE *Edm. Nisbet*

OF THE  
PATHOLOGICAL SPECIMENS

CONTAINED IN  
THE MUSEUM  
OF  
THE ROYAL COLLEGE OF SURGEONS  
OF ENGLAND.

VOLUME V.

SPECIMENS PRESERVED IN THE DRY STATE IN CABINETS.



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DIVISION II.

SPECIAL PATHOLOGY,

CONTINUED.

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THE specimens described in this volume are those which, for various reasons, it was not convenient to place in the Galleries of the Museum. They are arranged in Series corresponding with those in which the specimens described in the former volumes of the Catalogue are classed, and have been referred to in those volumes, at the end of the several Sections.

SERIES LXII.\*—DEATH OF PARTS OF THE BODY;  
MORTIFICATION.

2834. A leg amputated in a case of dry gangrene: its gangrenous part is said to have been little altered since its removal.

*Presented by — Luscombe, Esq.*

2835. An arm and hand which mortified up to the elbow-joint.

The following account was sent with the specimen from Andrew Jukes, Esq., to Dr. Babington, by whom it was given to the Museum:—

“A native Christian, residing on the island of Salsette, about thirty-five years of age, and of a healthy constitution, was seized rather suddenly in the month of May, 1816, with acute pain in his left arm, chiefly about the elbow, and which in a short

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\* Corresponding with Series V. in vol. i.

time, he says, produced a burning sensation in the palm of that hand. His occupation was that of a labourer in the fields, and he could not assign any reason for the sudden attack. When the pain had continued, according to his own account, for five or six days, he discovered some blackness commencing about the fingers, which gradually extended itself over the hand and up to the elbow-joint: he lost all sensation in the blackened part, the arm became dry and motionless, and ulceration began to take place a little above the elbow, on the inside of the arm. About sixteen or eighteen days after this attack he came in to Tannah for medical advice: the arm at this time, from the elbow downwards, was perfectly black, dry, and insensible, but covered with its skin and muscles; the hand, nearly as plump and large as in health, and the nails perfect upon the fingers,—it now hung lifeless and useless by his side, like a mummy. Ulceration had destroyed all the integuments about the elbow-joint, and had extended itself more than half way up towards the shoulder: a separation, however, between the dead and living parts had decidedly taken place, and healthy granulations had begun to appear about the upper part of the arm. Three or four inches of the humerus were completely uncovered, the bone looking white and dead. It was very offensive, and still painful, though less so than it had been, and the man's general health seemed to have suffered but little. As the arm, however, was now become a useless and very disagreeable member, I recommended him to submit to amputation without delay, which he readily consented to, and I removed the arm about four inches below the shoulder-joint. There was no appearance of the bone being at all diseased, the stump healed readily, and the poor man returned home in less than a month, quite well.

“In the arm, which I now send to you, you will observe that all the skin and integuments about the hand, the nails, &c., are remarkably perfect, and there is even some appearance of a full vein crossing the radius just above the wrist. The arm, since being amputated, has undergone no kind of preparation, save that of wrapping it in powdered spices and bark to preserve it during our heavy rains at Tannah, and it has since been covered with a little varnish.”

### SERIES LXIII.\*—CYSTS.

2836. A large cyst, distended and dried, from a sheep.

*Hunterian.*

2837. A similar preparation.

*Hunterian.*

\* Corresponding with Series VI. in vol. i.

SERIES LXIV.\*—INJURIES AND DISEASES OF BONES.

1. *Hypertrophy.*

2838. A vertical section of a skull of unusually small capacity. The anterior region of its cavity is especially diminished by increase of the diploe of the frontal bone, and sinking in of the inner table. The middle part of the frontal bone is eight lines in thickness. There is a slight prominence of the frontal region of the skull externally. All the osseous tissue is healthy. The parietal bone is not thickened; the coronal suture is obliterated. *Hunterian.*

2839. Portion of a frontal bone increased, by the growth of healthy diploe, to a thickness of six lines. It is probable that in both this and the preceding case the hypertrophy of the skull was associated with atrophy of the brain. *Hunterian.*

2840. The right half of a skull, the upper and lateral walls of which are generally and almost uniformly thickened. The greatest thickness is at the middle of the right half of the frontal bone, the section of a portion of which, cut out with a trepan, measures five lines. The increase is chiefly owing to the augmentation of the diploe, and is accompanied by a decrease in the capacity of the skull. The texture of the diploe is hard and heavy, and the cancelli in it are small. The tables of the skull are thick, and somewhat rough and porous; and their lines of boundary from the diploe are obscure. The interior is deeply marked with vascular grooves and apertures. *Hunterian.*

2841. The upper part of a skull (marked "Mr. Ferguson"), increased in weight and thickness. The chief increase is in the frontal bone, the

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\* Corresponding with Series XII, in vol. ii.

section of the middle and lower portion of which is eight lines thick. The increase of thickness is entirely in the diploe; and the internal table of the skull is pushed inwards, so that the anterior region of the cranial cavity is diminished to an extent which is not indicated by the form of the unaltered external table. The internal surface of the skull is deeply marked by the vascular grooves and apertures; and on the interior of the frontal bone are several irregular circumscribed depressions, such as might be formed by large Pacchionian glands. There are fewer and smaller depressions of the same kind on the inner surface of the parietal bone. The upper border of the frontal bone forms, in the middle line, an angle of about  $140^{\circ}$ , which is received between the anterior borders of the parietal bones; and the temporal ridges are prominent, and unusually approximated to the sagittal suture. The sutures are not obliterated.

*Hunterian.*

2842. Section of the upper part of a skull of unusual weight and thickness. Nearly the whole of the increase is in the situations of the original centres of ossification of the frontal and parietal bones; and it is effected chiefly by an augmentation of the diploe, which is hard and heavy, and, on the cut surface of the parietal bone, is three lines and a half in thickness. The thickening of the skull is much more obvious on its internal than on its external surface, and the former is marked deeply by the grooves for blood-vessels. The sutures are scarcely traceable internally.

*Hunterian.*

2843. Section of the upper part of a skull similarly thickened, indurated, and increased in weight. The median part of the frontal bone is six lines in thickness, of which thickness the diploe occupies rather more than four lines. The coronal and sagittal sutures are obliterated internally; and in the course of the former there is a considerable depression on the exterior of the skull. In other respects the skull resembles the preceding specimen.

*Hunterian.*

2844. The upper part of a skull, singularly wide and round in its shape, and



much thickened in the parietal and frontal bones, especially in the situations of their original centres of ossification. The thickening of the skull has elevated equally its external and internal surfaces, and large external prominences correspond to depressions equal in degree within the skull. The external surface of the skull is rough, especially in the prominent parts; the internal surface is rather deeply marked by the vascular grooves and apertures, but the texture of both it and the diploe is healthy. The coronal and part of the sagittal sutures are obliterated, but in the course of the latter is an oval Wormian bone. *Hunterian.*

## 2. *Atrophy of Bone.*

2845. The upper part of a femur, of full size, but remarkably light. The vascular canals in the walls of the shaft are numerous and large; and on part of the neck the compact tissue is so diminished that there remains only a finely porous osseous substance. *Hunterian.*
2846. A left femur, somewhat more than usually curved forwards, and very light, though the general appearance of its tissue is not changed. The head and neck are small, and their axis forms, with that of the shaft, an angle less obtuse than is natural. *Hunterian.*
2847. A tibia, not unhealthy in appearance, but very light. The compact tissue forms so thin a layer round its articular extremities, that they may be crushed by the pressure of the fingers. *Hunterian.*
2848. The humerus of a young ostrich, a little enlarged, porous at its proximal extremity, and bent at the middle of its shaft. Its whole tissue is light and atrophied. *Hunterian.*
2849. The opposite humerus of the same bird. Its proximal extremity is similarly diseased, but to a greater extent. *Hunterian.*

2850. The upper part of the skull of a *giddy* sheep, in which are several small apertures produced by the pressure of hydatids growing within the brain. The texture of the bone around the apertures is healthy; the diploe is not exposed in the thinning and perforation of the skull. *Hunterian.*

2851. The skull of a sheep in which, in consequence of the growth of hydatids in the brain, the parietal and parts of the frontal and temporal bones have become very thin, and are in three situations perforated. The tumour formed by the protrusion of the parts from within the skull through these apertures had nearly opened externally.

*Presented by Sir Joseph Banks.*

2851A. The upper part of a skull. At the anterior border of the right parietal bone, on the inner surface, there is a deep circular cavity, an inch in diameter, which appears to have been formed in consequence of the growth of a tumour from the brain or dura mater. Its surface is smooth and hard, like that of the rest of the inner table, and is grooved in adaptation to some of the branches of the middle meningeal artery. At the middle of the depression the whole thickness of the skull is penetrated. A slight elevation is discernible on the corresponding part of the exterior of the skull.

2852. The first bone of a sternum, on which, near its articulation with the first left rib, there is a deep cavity, the consequence of the atrophy produced by the pressure of an aneurism. *Hunterian.*

2853. The second bone of a sternum, part of the posterior surface of which has been absorbed in consequence of the pressure of an aneurism. In neither this nor the preceding preparations is there any appearance of ulceration of the bone; its tissue has grown, though less quickly than it has been removed, and retaining a healthy structure, has been modelled to the form of the body pressing on it. In this view the specimen may be compared with Nos. 3098 to 3101, which show an ulceration of bone in consequence of the pressure of aneurisms. *Hunterian.*

2854. An humerus, ulna, femur, tibia, and part of the scapula of the rickety lion, whose other humerus and femur are described in vol. ii., p. 20, Nos. 386-7. Their whole texture is light, dry, and friable; they have scarcely any compact tissue, and what there is, is very thin, porous, and brittle. The femur is broken in two places, and in no degree repaired. Part of the scapula also has been broken or bent, and is fixed in its unnatural position.\* *Hunterian.*

2855. Numerous bones of the monkey, whose ulna is described in vol. ii., p. 21, No. 388. They exhibit changes like those last described, but in a more advanced form. They are all large, very light, finely porous, and friable, with scarcely a trace of compact tissue. The bones of the upper part of the head are five lines in thickness, and there is scarcely any distinction between the tables and the diploe, except that the surfaces of the former are smooth and rather more compact. All the long bones are similarly affected, so that the largest of them may be crushed between the fingers. Many are broken; but this probably was done after the death of the animal. *Hunterian.*

2856. The skull of a young lion, who died with scrofula during dentition. All the bones are, like those last described, exceedingly light, dry, porous, and friable. They have no external layer of compact tissue, but appear to be composed throughout of delicate and close-set undulating osseous filaments and lamellæ, whose margins being set vertically, and arranged in groups of various nearly parallel curves, make its surface like that of a fine coral.

*Presented by the Council of the Zoological Society.*

2857. Part of a skull, in which the frontal and parietal bones, in consequence probably of rickets, present changes somewhat like those shown in the preceding specimens. They are very thin and light, and their texture is throughout greyish, dry, and friable. The external surface has a fibrous

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\* The specimens of changes in the shape of bones in consequence of rickets—changes remaining after the recovery from the morbid alterations of structure—are at the end of this section, Nos. 2865 to 2880.

appearance, like that of coarse woollen cloth. The capacity of the skull appears to have been very small. *Hunterian.*

2858. The greater part of a skull, of which all the bones, but especially those composing its vault, are remarkably thickened. A large portion of the posterior and upper part of the skull has been broken away, and the edges of the bone thus exposed have a thickness varying from three quarters of an inch to an inch and a quarter. The whole of the parietal, and a great part of the frontal, bones are of the same thickness: the squamous portions of the temporal bones are half an inch thick, but below them the thickness gradually decreases towards the middle of the base of the skull, where the bones are much less altered in size. The superior maxillary, malar, and sphenoid bones are thickened, but less than the bones of the cranium. The tissue of all the bones of the upper part of the skull is converted into a nearly uniform, finely cancellous, dry, porous, and friable, though hard substance, of less specific gravity than that of a healthy skull. Their surfaces (the compact tables remaining in but few parts) are perforated by numberless apertures, those on the exterior being much smaller than those on the internal surface; the grooves for the blood-vessels are very deep, and all the sutures of both the face and the skull are obliterated. In the bones of the face the same porous change is less distinctly marked. By the thickening of their walls, the cavities of the skull and the orbits are considerably diminished. That of the former is especially diminished in its depth, measuring in its antero-posterior diameter about seven inches, in its transverse diameter five inches, in its vertical diameter three inches and three quarters, taking the extreme points of each.

The skull was found in digging a grave in the churchyard of Stepney, near London, and was given to Mr. Hunter by Mr. Patton, surgeon, of Ratcliffe Cross.

*Hunterian.*

2859. The upper part of a skull, increased in thickness in every part, but especially in the frontal region, where it is from six to eight lines in thickness. This increase is accompanied by a corresponding decrease in

the capacity of the skull, and by a change of structure of the bones, which may be ascribed to a process of hardening following, and in some degree repairing, the porous change displayed in the preceding specimen. Except on some parts of the surface, there is no discernible distinction between the tables and the diploe; they are converted into a nearly uniform, hard, and finely porous texture. The inner surface of the skull is more coarsely porous, and perforated by larger apertures for blood-vessels than the outer surface: it is also deeply grooved by channels for the meningeal arteries. All the sutures are obliterated.

*Hunterian.*

2860. A parietal bone, ten lines in thickness, very hard and heavy, with thick rounded margins, and apparently very nearly solid. It has a remarkable chalky or limestone aspect. It is probably a portion of a skull which was diseased, like No. 2858; then became indurated and consolidated like that last described, but in a greater degree; and, lastly, acquired its present fossil-like appearance, by being long buried in a lime soil. It was found in the Hunterian collection of fossils, marked, in a foreign hand-writing, "Antropolithus. s. Craniū humanū, locus incertus."

*Hunterian.*

2861. A longitudinal section of a right humerus, which was fractured through the middle of its shaft by a slight voluntary effort. Its walls are thin, light, and brittle, and their surface is rough and porous. Nearly all the cancellous tissue has been removed, but of that which remains near the ends of the bone the cancelli are very thick. No attempt at repair has taken place.

*From the Museum of John Howship, Esq.*

2862. The left humerus of the same person, which was broken near the middle of its shaft, as he was stretching his arm in bed. It presents the same changes as the preceding.

The arm had, for a long time before the fracture, been the seat of severe deep-seated pain, which was supposed to arise from rheumatic disease of the bone.

*From the Museum of John Howship, Esq.*



2863. The other section of the humerus, affected with fatty degeneration, which is described in vol. ii. p. 25, No. 398, together with the radius, ulna, carpus, and bones of the hand of the same patient. The shafts of the humerus, radius, and ulna have, in drying, shrivelled into a light substance, of a dark reddish colour, almost like dried muscle; their extremities are less altered, but very light. The radius and ulna have both been fractured in their shafts, and no attempt at union appears to have been made. The bones of the hand are light, but not evidently softened.

*Hunterian.*

2864. The upper part of a right femur, which was fractured by a very slight force. Its texture is light, greasy, and soft, and, in drying, has acquired a deep mahogany colour. Its walls are very thin, its neck forms scarcely more than a right angle with the shaft, and the shaft is curved forwards; its head is unaltered.

The other femur, similarly diseased and fractured, is described in vol. ii., p. 29, No. 400.

*Hunterian.*

2 A. *Bones of which the shape is altered in consequence of Rickets.*

2865. A right humerus, from an adult, of which, in consequence of rickets, the upper part of the shaft is slightly curved outwards. Its tissue does not appear unhealthy, but it is altogether of small dimensions.

*Hunterian.*

2866. The left humerus of the same person, similarly curved. *Hunterian.*

2867. The left humerus of an adult, the whole shaft of which, in consequence of rickets, is considerably curved outwards. Its tissue appears healthy, and the parts for the attachment of muscles are well developed. *Hunterian.*

2868. An adult femur, of which the shaft is more than usually curved forwards;

its tissue, though rather light, appears healthy, and its neck has its natural obliquity. *Hunterian.*

2869. An adult femur, the shaft of which, in consequence of rickets, is a little more than usually curved forwards. It is somewhat enlarged in the upper third, and its whole tissue is very heavy. The axis of the neck forms a right angle with that of the shaft, and the head is below the summit of the great trochanter, but the substance of the bone is healthy. *Hunterian.*

2870. An adult femur, similarly diseased. The linea aspera is very prominent, and the inner border of the shaft is sharper than is natural. The axis of the neck forms little more than a right angle with the shaft. The internal condyle is placed more than usually backward, and the external one is proportionally prominent, so that the lower part of the shaft looks as if it had been twisted round, an appearance less distinctly seen in the specimen last described. All the osseous tissue appears healthy. *Hunterian.*

2871. A right femur, exhibiting almost exactly similar changes. The bone is small and slender in all its parts, especially at its articular portions, but its tissue appears healthy. *Hunterian.*

2872. The left femur of the same person, similarly and symmetrically changed. *Hunterian.*

2873. The right tibia and fibula of the same person. Both of them are considerably curved forwards and inwards, and their shafts are much flattened; that of the fibula being, at one part, an inch wide, and about three lines in thickness. The tissue of both bones appears healthy, and their extremities, though they seem to have been unusually greasy, are natural in form and size. *Hunterian.*

2874. The left tibia and fibula of the same person, similarly and symmetrically changed. *Hunterian.*

2875. A tibia, the shaft of which is curved inwards in consequence of rickets, but its tissue appears healthy. *Hunterian.*

2876. A tibia, of which the shaft, from the same disease, is curved forwards and inwards, and remarkably flattened, its inner and outer surfaces being in nearly parallel planes. The shaft is increased in density; the extremities are more than usually greasy. *Hunterian.*

2877. A tibia and fibula, the shafts of which, in consequence of rickets, are remarkably curved inwards and flattened. At the most prominent part of its curve, which is just above the junction of its middle and lower thirds, the shaft of the fibula is an inch and a quarter in width, but not more than two lines in thickness. Just below this part an irregular process of bone has grown from the outer border of the tibia, and is received in a corresponding cavity on the inner border of the fibula, so as to form a kind of false joint between them. There is a similar smaller growth on the inner margin of the tibia: in other respects the bones are healthy. *Hunterian.*

2878. Vertical sections of a tibia and fibula, similarly, but rather less, curved forwards and inwards. They exhibit a great increase in the thickness of that part of the walls of the shafts which lies in the concavity of the curve formed by them. The thickness of the wall at the most curved part is five lines, while that of the wall which forms the convexity is only two lines; in the fibula the thickness of the wall is, in the concavity, about four lines and a half, in the convexity one line and a half. The increased thickness of the wall has taken place chiefly at the expense of the cancellous tissue, the lamellæ of which have been thickened and consolidated, and in this state annexed to the wall. Adjacent to the curved part, the cancelli of the medullary tissue are very large. The shortness and flattening of the shafts of these bones make their articular extremities appear disproportionately large, but they are not absolutely larger than in ordinary bones of adult skeletons.

2879. The femora, tibia, and fibula of an adult, all unnaturally curved forwards, in consequence of rickets, and presenting the same peculiarities of shape as are shown in many of the preceding. Besides these the tibiæ present a slight double lateral curvature, so that they have nearly the shape of clavicles. In the lower third, each tibia and fibula was nearly in contact, and a flat prominent elevation of bone has grown out from the adjacent surfaces of each, by which a kind of false joint was formed between them. The position of these growths is almost exactly the same as that of the similar growth in No. 2877; and in the left tibia there is another similar growth on its inner margin, near its head, just like that described in the same specimen.

*From the Museum of Robert Liston, Esq.*

2879A. A pelvis, with rickety femora, tibiæ, and fibulæ. The pelvis, both in tissue and in dimensions, appears healthy. The other bones present the same kinds of deformity as those last described. The necks of the femora are short, their shafts curved forwards, with their lineæ asperæ very prominent. Below, the shafts expand more suddenly than in the natural state, to form the condyles; and thus the articular extremities, though not of unusual dimensions, appear disproportionately large: their outer condyles also are more prominent than is usual. The tibiæ, besides the ordinary curvature forwards and inwards, have a slight double lateral or *clavicular* curvature; and both of them have small spinous growths on their inner margins near their heads.

2879B. The skeleton of an adult Spaniard, affected with rickets. It measures three feet eleven inches in height, and the bones appear to be of natural strength and firmness. The head is of average size, and well formed. The vertebral column presents a double curve; the upper curvature, formed by the dorsal vertebræ, has its convexity directed obliquely forwards, and to the right; in the lower one the lumbar vertebræ are directed with a convexity backwards, and to the left. The sacrum also is slightly curved, its apex being directed towards the left side. The

vertebræ are of healthy texture; those in the upper curve have the left sides of their bodies turned forwards, and those in the lower curve their right sides so turned; and, in both, the sides thus turned forwards are less deep than those turned backwards and lying on the convexity of the curve. The chest is nearly symmetrical; but both its vertical and its antero-posterior diameters are, in consequence of the deformity of the spine, much below the average dimensions. The ribs are short, wide, and nearly horizontal; those on the left side being, at and about their angles, closely crowded, but diverging as they come forwards. The sternum is of natural form and size. The ossa innominata are obliquely placed, in adaptation to the curvature of the spine; the brim of the pelvis is slightly narrowed by incurvation on both sides, but especially on the left side, opposite the acetabulum; and the lower aperture of the pelvis is narrowed by the approximation of the tuberosities of the ischia. The scapulæ and clavicles are well formed, but rather short. The humeri are only nine inches long: their heads are large, light, and oval, their larger axes being directed from without inwards. The tuberosities also are large and broad; the deltoid ridges strongly marked; the shafts of full thickness; and their posterior surface at the upper part very broad and flat. The left elbow-joint, fore-arm, and hand appear well formed; so do the right fore-arm and hand; but in the right elbow-joint the fore-arm is nearly fixed at right angles to the humerus, the condyles of which have acquired imperfect articular surfaces on their anterior aspects. The femora are only nine inches high; the tibiæ and fibulæ twelve inches; and all these bones present the changes of form characteristic of rickets, and described in several of the preceding specimens. The feet are of natural shape.

*Purchased, 1846.*

2879c. The skeleton of a child, about seven years old, exhibiting some of the deformities produced by rickets, together with the results of extreme fragility of the bones. There is a slight lateral curve in the upper dorsal part of the spine, and the chest projects forwards and is flattened laterally, with incurvation of the sternum and many of the ribs. The front of the pelvis is *beaked*, by the approximation of the acetabula, and



the rami of the ischia are nearly parallel: the lower half of the sacrum is directed straight forwards. The femora are curved forwards, and the tibiæ and fibulæ slightly inwards. Besides these deformities, which may be ascribed to rickets, many others appear due to fractures of the bones united with displacement. The whole number of fractures is forty-two. The right clavicle is broken in one, and the left in three places; on the right side all the ribs, except the twelfth, are broken in one, two, or three places, and on the left side all except the last three: both the humeri, radii, and ulnæ are fractured. The fractures are chiefly transverse, and most of them are united; but there is scarcely any accumulation of new bone about them. The disease of the bones, by which the fractures were preceded, appears to have been like that shown in Nos. 2854-5-6; they are light, spongy, friable, and fragile, and their walls appear very thin. They are as long as natural, and, except in their curvatures, are not deformed as in rickets.

*From the Museum of Professor Himly of Göttingen.*

2880. The skeleton of a ricketty cat. All its parts appear well formed except the spine and extremities. In the middle of the dorsal region the spine is bent towards the sternum, and, without any lateral curvature, forms a right angle directed downwards. The texture of the bodies of the vertebræ is not discernibly altered, but they are small, their posterior parts are decreased in depth, and the spinous processes are small and closely approximated. The ribs connected with this part of the spine are curved far upwards and outwards; and, by this compensation, and the consequently increased width, the cavity of the chest has acquired full dimensions, though encroached upon by the incurved spine. The scapulæ are short, convex, and thick; the humeri short, thick, and curved forwards; the radii and ulnæ less shortened and curved forwards, but at their most curved parts flattened, thin, and very wide. The pelvis is short, and all its bones are thick; its posterior and lower part is curved forwards, the acetabula are approximated, and the whole of its outlet is narrower than is natural. The femora, tibiæ, and fibulæ are thick, short,

and curved forwards, but in a less degree than the bones of the anterior extremities.

### 3. *Injuries of Bone by External Violence.*

#### 3 A. *Wounds and Fractures of the Skull.*

- 2880A. The skull of a Chinese, exhibiting numerous recent wounds and fractures. Five portions of the skull have been cut away, probably by sword-wounds, from the frontal and left parietal bones, and long fissures extend from similar wounds through both the parietal, the occipital, and the right temporal bones. The right malar, superior maxillary, and nasal bones are also cut across; and on the left side of the frontal bone is the scar of a wound, with loss of substance, which was probably inflicted long before death.
- Presented by John Morgan, Esq.*

2881. Part of a skull which was extensively fissured some time before death. The chief force of the injury appears to have fallen upon the upper part of the lambdoidal suture; for here a portion of bone, nearly surrounded by fissures, is slightly depressed, and starred at its centre. From the fissures surrounding this part, two others extend across the parietal bone to the left temporal bone, and a third, nearly in the course of the obliterated sagittal suture, to the right superciliary ridge of the frontal bone. None of the fissures are closed, but their margins are smoothly rounded.
- Hunterian.*

2882. The upper part of a skull on which the trepan had been used twice in the course of the coronal suture. Of the sagittal suture a small portion only remains at its junction with the coronal, and from the end of this portion a fissure extends into the right parietal bone.
- Hunterian.*

2883. The upper part of a skull which was fissured from one parietal bone to the other, in a line passing obliquely across the upper part of the frontal

bone. Trephines were applied twice on the right parietal bone beyond the line of fracture, and once over the end of the coronal suture on the left side. On the outer surface of the skull the fracture is completely healed; no portion of it is open, but there is a broad rough depression in its former course, as if there had been a large cicatrix of the integuments. On the inner table the fissure is still slightly open, but its margins are on the same level, and are smoothly rounded. So also are those of the holes made by the trepans, but there are no traces of any growth of bone towards filling them up. *Hunterian.*

2884. The upper part of a skull, which was fractured near the meeting of the coronal and sagittal sutures. There appears to have been but little injury to the inner table, and complete healing has taken place, but with much irregularity of the outer surface of the skull.

*Presented by Sir William Blizard.*

2885. The upper part of a skull, in which there has been a starred and circumscribed fracture, with depression, on the right side of the frontal bone. The depressed portion is oval, and measures an inch and a quarter by two inches; the depth of the depression is, at the centre, nearly half an inch. The fracture has been healed, though the radiating lines in which it extended are distinct. These lines on the outer and inner table do not exactly correspond, and the fracture surrounding the depressed portion appears to have extended only through the outer table. The tissue of the depressed bone is consolidated.

The patient was a Life Guardsman, who received a kick from his horse in the situation of the fracture two years before his death. He was stunned for a short time, but no further signs of cerebral disorder ensued, and when the wound of the scalp was healed he left the barrack hospital well. He died of phthisis.

*From the Museum of R. B. Walker, Esq.*

2886. The upper part of a skull, in which a small portion of the centre of the frontal bone has been fractured and slightly depressed. There is a deep cavity in the place of the fracture, for the outer table and diploe have

been removed, the fracture having probably been a compound one, and followed by necrosis or ulceration. The fractured portion of the inner table was nearly detached, but is reunited.

*The twelve following specimens were taken from a military burying-ground at Hesse-Cassel, and were purchased from the Museum of John Heaviside, Esq.*

2887. The upper part of a skull, in which there has been a circumscribed fracture, with central depression, of the lower and anterior part of the left parietal bone. A piece of bone was removed from the posterior margin of the fracture, but the portions were imperfectly, if at all, elevated. They have, however, united firmly, and, by the closeness of the union, and the smooth roundness of their margins, it is probable that the patient lived a long time, although one narrow portion of bone projects inwards half an inch below the level of the surrounding parts.
2888. A skull, in which there has been a circumscribed and comminuted fracture of the middle and lower part of the frontal bone. The upper margin of the fractured portion is depressed about a quarter of an inch, but it is in part united smoothly to the inner table of the bone around it, and all the fissures extending from it are nearly closed. The broken edges also are smoothly rounded.
2889. Part of a skull, on which a wound was inflicted immediately above the left orbit and the frontal sinuses, laying open both those cavities. The greater part of the wound over the frontal sinuses is closed, but that through the anterior and upper wall of the orbit remains wide open, though its margins are smooth and cicatrized.
2890. Part of a skull, on which a deep oblique wound was inflicted near the middle of the frontal bone. A portion of the outer table and diploe was broken into three pieces, and nearly detached, but complete re-union has taken place, though the deeper edge of the wound remains open. The inner table of the skull was not injured.

2891. Part of a skull, on which a wound was inflicted through the outer table of the left side of the frontal bone. The wound is nearly filled up, and its margins are smoothly bevelled off.
2892. A skull, on which two deep and large wounds were inflicted, one upon the upper part of the left parietal bone, the other across the left and upper part of the lambdoidal suture. Neither of them appears to have implicated the inner table. Both of them are healed, with partial filling up of the gaping borders of the wounds, and a nearly complete obliteration of the fissures leading from them. There are appearances of superficial cicatrization over a great part of the right parietal and the left side of the frontal bone, which were perhaps the consequence of extensive suppuration beneath the scalp.
2893. Part of a skull, on which a wound was inflicted which cut obliquely through the whole thickness of the upper part of the left parietal bone. The portion of bone raised up by the cut has not been replaced, but its margins are smoothly rounded, and a fissure which was made in it has nearly closed. The margins also of the opening in the inner table at the deepest part of the wound are smooth, and the rest of the wound is in great measure filled up and healed. There is also a cicatrix of a smaller and more superficial wound on the middle of the os frontis.
2894. Part of a skull, on which a wound was inflicted which cut obliquely through the left half of the frontal bone, and cracked the same bone from its centre to the edge of the right orbit. The fissure is nearly closed, and the wound, though wide open, has its margins smoothly rounded, as if healing had been nearly accomplished.
2895. A skull, from which a portion of the frontal bone, including both its tables, was nearly cut off by an oblique wound. One edge of the wound remains open, with smooth shelving healed borders; the rest is nearly closed, and the broken portion is firmly fixed.

2896. A skull, on the parietal bones of which three wounds have been inflicted. One, which has cut, in a great part of its extent, through the whole thickness of the bone, nearly detached an oval portion more than two inches in its greatest diameter; the others are smaller and more superficial, but by one of them a small piece of bone appears to have been completely detached. The wounds have all healed to the same extent, and in the same manner, as in the preceding specimens, and, as in all of them, without any considerable production of new bone; and the detached piece of bone has been fixed again near the place from which it was removed.
2897. A skull, on which a very broad deep wound was made through the front of the frontal bone. The wound is more than three inches long, and its edges are nearly an inch apart. The same kind of healing has occurred as in the preceding specimens, and portions detached from one of the margins of the wound have been re-united. Another obliquely penetrating wound, about an inch long, in the occipital bone, is similarly healed.
2898. A skull, from which a portion, nearly three inches in diameter, was cut off the middle and left side of the occipital bone, and was by the same blow broken into several pieces. The pieces are all re-united, and the whole portion of bone, after having been forced nearly half an inch from its original situation, has been firmly fixed to the contiguous part of the skull. The gaps thus left in the skull have had their margins made thin and smooth, but do not appear to have been at all filled up by bone. The wound must have passed through the left lateral sinus, and through the end of the longitudinal sinus, cutting off the torcular Herophili.
2899. A skull, from which a large piece of the right parietal bone was obliquely cut off, and firmly re-united to the adjacent bone, leaving one margin of the wound wide open.

*From the Museum of Sir A. P. Cooper.*



2900. The upper part of a skull, with a small leaden shot imbedded in the left parietal bone. There are two small and smooth superficial depressions near it, from which other shots were separated. The adjacent bone is quite healthy. *Hunterian.*

2901. A parietal bone, in which are two deep depressions of the external table and diploe, consequent on the lodgment and subsequent discharge of two shots. At the bottom of one of them is a small perforation of the inner table, but in other respects all the adjacent bone is healthy. *Hunterian.*

### 3 B. *Fractures of the Bones of the Face.*

2902. Part of a skull. The ossa nasi have been fractured transversely across the middle of their length, and are re-united, with a slight lateral displacement of the lower portions. The lower portions are also united by bone to each other, and to the superior maxillary bones. *Hunterian.*

2903. A nearly edentulous lower jaw, which was fractured through its right side, about an inch anterior to the angle. The portions are united smoothly, and with very little displacement.

*From the Museum of Joshua Brookes, Esq.*

### 3 C. *Fractures of the Ribs.*

2904. A second rib, fractured through its middle, and united, without displacement of the portions. The situation of the fracture is indicated only by a rough thickening of the borders and the inner wall. *Hunterian.*

2905. An eleventh rib, fractured through its middle, and united without displacement, but with considerable thickening and the formation of ridges of bone on both its borders. *Hunterian.*



2906. A nearly similar specimen. These three were probably taken from the same person. *Hunterian.*
2907. The rib of an ox, which was fractured very obliquely, and into three or four pieces. Its portions are united imperfectly, the dorsal portions having been drawn forwards from the sternal one; but there is no lateral displacement, and the union is firm. *Hunterian.*
2908. Part of the rib of an ox, fractured transversely. Its portions are united, with but little displacement; imperfectly on the outer side, but very firmly, and with considerable thickening, on the inner wall. *Hunterian.*
2909. A false rib, from some large mammal. It was only partially ossified, but it was fractured in several places, and its portions are united by rings of bone. *Hunterian.*
2910. The first left rib of an ostrich, fractured near its head, and re-united, with considerable lateral displacement of its portions, and with a large accumulation of bone. *Hunterian.*
2911. The second left rib of the same ostrich, similarly fractured and repaired. *Hunterian.*
2912. The third left rib of the same ostrich, similarly fractured and repaired. *Hunterian.*
2913. The seventh left rib of the same ostrich, fractured at a greater distance from its head, and re-united with less displacement and less accumulation of bone. *Hunterian.*
2914. The eighth right rib of the same ostrich, fractured and repaired like the rest. *Hunterian.*

3 D. *Fractures of the Pelvis.*

2915. A left os innominatum, fractured in two lines, from the crest of the ilium to the margin of the acetabulum, thence across the acetabulum obliquely through the outer part of the body of the os pubis, and in a line passing downwards, from the centre of the acetabulum, through the upper part of the ischium, as far as its spine. The fractured portions appear to have been but little displaced, and they are firmly and closely united, with a great accumulation of bone upon their margins. The union is least perfect in the acetabulum, where, in the two lines of fracture just described, there still remain three gaps, and some appearance of ulceration. The articular cartilage of the acetabulum, though cracked across in three lines, appears to have undergone no further change.

The patient, twenty years old, fell from a height of thirty feet on his left trochanter. Crepitus was felt near the acetabulum, the left foot was everted; rotation of the thigh inwards was very painful, but the limb was not shortened. In St. Bartholomew's Hospital he was placed on the double-inclined plane; a broad strap was placed round the pelvis, and his feet and left thigh were so fixed as to prevent eversion. He had for a time retention of urine; and, subsequently, acute bronchitis or pneumonia. He left the hospital seven months after the accident, able to walk nearly as well as before; but he died in the following year with a return of his pulmonary disease.

*From the Museum of John Howship, Esq.*

2916. The greater part of an ilium, through which, in the battle of Waterloo, a musket-shot passed obliquely. The shot, misshapen and oxydized, lies in the track of the wound, near its inferior extremity. There are marks of inflammation of the bone around the shot; the margins of the channel formed by it are hard and smoothly rounded.

*From the Museum of Robert Liston, Esq.*

2917. The pelvis of a deer, in which the ossa pubis and the left ischium were fractured in several directions. Their portions are firmly re-united, with considerable accumulation of bone, and but little distortion.

*Hunterian.*

3 E. *Fractures of the Scapula.*

2918. A right scapula, which was split from its base through a part of its infra-spinal fossa. The fissure is not closed, but osseous matter is formed about its margins. *Hunterian.*
2919. The scapula of a lion, of which a part of the base appears to have been broken off. Osseous matter is deposited along the margins of the fracture. *Hunterian.*
2920. A scapula, fractured in several directions through its spine and fossæ by a bullet, which is still lodged in the spine, but is flattened and misshapen. It appears to have passed through the supra-spinal fossa from the front.
2921. Part of the left scapula of an ostrich; probably the same ostrich as that from which the fractured ribs (Nos. 2910 to 2914) were taken. It is fractured through the middle of its length. The portions were rather widely separated, but are united by a layer of bone placed between their adjacent surfaces, and their fractured ends are smoothly rounded. *Hunterian.*

3 F. *Fractures of the Clavicle.*

2922. A right clavicle, fractured through the middle of its shaft, and repaired, with considerable displacement of its portions. The scapular portion has passed far under the sternal one, and they are united by a large irregular bridge of bone. *Hunterian.*
2923. A left clavicle, fractured in the same situation, and also repaired, with considerable displacement: the scapular portion has passed behind the sternal one, and the bridge of bone uniting them is smooth and flat. *Hunterian.*

2924. A clavicle, fractured obliquely through the middle of its shaft. The scapular portion has passed directly under the clavicular one, and, in this position, they are smoothly united by intermediate new bone.
2925. A clavicle, fractured and comminuted close to its acromial end. The two chief portions are united at a right angle with each other, and an abundance of new bone has been formed about the seat of fracture.

3 G. *Fractures of the Humerus.*

2926. A left scapula, clavicle, and humerus. The great tubercle of the humerus, with an adjacent portion of the border of the head, has been broken off. It is firmly re-united to the shaft, though but partially, for only one border of it is fixed, and the rest is widely separated. Below it, some small splinters seem to have been broken from the shaft and re-united. There is some superficial ulceration and deposit of bone around the margin of the glenoid cavity of the scapula. *Hunterian.*
2927. A left humerus, fractured almost transversely through the upper part of the shaft, in a plane extending from the lower margin of the head to the lower part of the tuberosities. The portions are re-united in almost exactly their original relations, but with a small accumulation of new bone on the inner side of the fracture.

*From the Museum of Robert Liston, Esq.*

2928. A vertical section of an humerus, similarly fractured. The portions are little displaced, and a slight union has been effected by new bone formed round the line of fracture. Light new bone has also been abundantly formed upon the surface of the upper part of the shaft, and, in one situation, appears traversed by an ulcerated canal. The cancellous tissue in the upper portion appears unaltered since the occurrence of the fracture.

2929. A right humerus, which was fractured transversely just below its tubercles. The upper end of the shaft appears to have been drawn forwards, and is united by a short bridge of bone to the anterior border of the head and neck. The head and its tubercles are reduced to a disk-like mass, less than an inch in thickness, and having externally a smooth flat surface continuous with the outer wall of the shaft. The articular surface of the head is ulcerated at its centre, and bone is irregularly accumulated around its margin. *Hunterian.*

2930. A right humerus, fractured and repaired in almost exactly the same manner as that last described. It was also fractured obliquely through the lower part of its shaft, and these portions are united with a slight lateral displacement. *Hunterian.*

2931. A left humerus, fractured obliquely just below the head and the tuberosities. The portions are firmly united, but the shaft is drawn inwards and a little forwards, so that it is placed almost directly under the head, and the prominence of the tuberosities is greatly diminished. *Hunterian.*

2932. A nearly similar specimen, with a large ridge of bone formed on the outer margin of the bicipital groove. *Hunterian.*

2933. The left humerus of a woman, seventy-seven years old, which was fractured obliquely just below the margin of the head and through the tubercles. The shaft is drawn forwards, upwards, and inwards, the outer surface of its upper end is united by bridges of bone to the broken surface of the head and neck, and the anterior fourth of the head rests in a cavity on the top of the shaft.

*From the Museum of John Howship, Esq.*

2934. The right humerus of a woman, seventy-nine years old, which was fractured transversely below the tubercles, and half an inch below the lower margin of the head. There was considerable displacement of the portions, the upper part of the shaft being drawn forwards, and its

lower end turned backwards and outwards. Union by ligament took place, and some new bone is formed around the ends of the fractured parts.

The patient had a curved spine. In a fall, caused by her foot tripping, she fractured her humerus and the neck of her femur. The accident happened ten months before death, and the arm was kept permanently extended "on a long splint, with a crutch," for five weeks. The patient recovered considerable power in the arm: she could make all her usual *underhand* movements, but could not raise the shoulder or the upper arm.

*From the Museum of John Howship, Esq.*

2935. Part of an humerus, fractured near its tubercles. Necrosis appears to have followed the fracture, and the dead portion of bone is surrounded with a layer of new bone.

2936. A left humerus, which was fractured in two or more directions about the junction of the upper and middle thirds of its shaft. Firm re-union has taken place, with very little distortion, but with a considerable increase in the size of the shaft.

2937. A right humerus, fractured obliquely through the middle of its shaft. The lower portion has been drawn upwards and backwards, but firm re-union has been effected by intermediate new bone. *Hunterian.*

2938. A left humerus, fractured rather obliquely through the middle of the shaft. The parts are united firmly, but with some lateral displacement. A large portion, which was displaced from the posterior part of the shaft, is now firmly fixed, like a bridge passing from one part of the shaft to the other. *Hunterian.*

2939. A right humerus, fractured transversely through the junction of the middle and lower thirds of its shaft. The portions are united firmly, but the lower lies almost entirely in front of the upper portion. The parts of the medullary tube, which were thus exposed at the end of each portion, are closed with bone; but slight depressions indicate their former

situation. The extremities of the portions are smoothly rounded, but a small osseous spine projects from the margin of each. *Hunterian.*

2940. A right humerus, the shaft of which was broken in two places about the junction of its middle and lower thirds. The portions are united firmly and evenly, but with a considerable displacement of the lowest portion, which is fixed anterior and external to the axis of the shaft. A smooth depression exists where the medullary tube of this lowest portion is covered in with a thin plate of bone. *Hunterian.*

2941. The bones of an elbow-joint. There has been a transverse fracture of the humerus immediately above the condyles, and in part within the joint. The lower fragment is drawn forwards and inwards, and its broken surface is firmly united by bone to the anterior border and surface of the upper fragment. Its articular surface, therefore, looks straight forwards, but there appears to have been free motion between it and the radius and ulna. *From the Museum of Sir A. P. Cooper.*

2942. The bones of an elbow-joint. There has been a comminuted and very irregular fracture of the articular extremity of the humerus, the portions of which are firmly united by bone, but much displaced, the inner condyle being carried inwards and upwards, the outer condyle backwards and upwards. The ulna is united by bone to the trochlea of the humerus, and is directed forwards, nearly at a right angle to the shaft; the radius can be freely rotated. *From the Museum of Sir A. P. Cooper.*

2943. The humerus of a hare, which was fractured near the middle of its shaft. The portions overlapped each other considerably, and are not united, though a large quantity of new bone is formed upon their adjacent surfaces. *Hunterian.*

2944. The humerus of a turkey, fractured in two or more directions, near the middle of its shaft. The portions are united firmly, but with such displacement that they form nearly a right angle with each other. *Hunterian.*



2945. The humerus of a fowl, fractured about the middle of its shaft. The parts were much displaced, but are united by an intermediate broad piece of bone. *Hunterian.*

2946. The humerus of an eagle, fractured in two places near the middle of its shaft. The two lower portions are united, with much displacement, the lowest of them having been turned half round; the upper portions are not united, but the broken end of the medullary tube is closed, and new bone is formed around its surface. *Hunterian.*

### 3 II. *Fractures of the Radius and Ulna.*

2947. The bones of an elbow-joint. The olecranon was fractured at its base. No union has taken place, but part of the detached portion suffered necrosis, and is partially separated. The articular surfaces of all the bones are superficially ulcerated, and new bone is abundantly deposited upon them in the neighbourhood of the joint.

2948. The upper part of an ulna, in which there is extensive ulceration of the articular surfaces, especially in the lesser sigmoid cavity. A fracture, passing vertically downwards from the joint through the base of the olecranon, is firmly united by interposed bone. *Hunterian.*

2949. The bones of an upper extremity, arranged by Mr. Hunter to illustrate his Lecture on fractures of the olecranon. The top of the olecranon has been sawn off, and fastened with a strip of leather to the back of the humerus. A portion of caoutchouc was also fixed in it, and in the piece of olecranon which was left connected with the shaft of the ulna; and both pieces are furnished with rivets and a hook, so that they may be closely adapted. The design appears to have been to show how, when the fore-arm is flexed, the two portions of a fractured olecranon are drawn apart; and how, when a ligamentous union is formed between two such portions, it, like the piece of caoutchouc which represents it, may be

longer or shorter according to the position in which the arm is maintained during its formation. *Hunterian.*

2950. A left radius, fractured rather obliquely at the middle of its shaft. The portions are united, with a slight displacement. *Hunterian.*

2951. A right radius, similarly fractured, but in which the apposition of the portions was less exact, the lower portion having passed upwards in front of the upper portion. *Hunterian.*

2952. A radius and ulna, of which the latter was broken through the middle of its shaft, and the former appears to have been fractured, or received some injury, about its head. The portions of the ulna are united, but with great enlargement around the seat of fracture, and slight distortion. The enlargement has proceeded so far, that the edge of part of the ulna has come nearly into contact with that of the radius, and a kind of joint is formed between them. The head of the radius is almost entirely removed; a remaining portion of its margin has formed a new joint with the side of the ulna below the lesser sigmoid cavity. The larger articular surface of the ulna is much increased in width, and new bone, such as is formed in rheumatic affections, is accumulated upon its margins. *From the Museum of Joshua Brookes, Esq.*

2953. A left ulna, with an ununited fracture through the middle of its shaft. The portions are displaced, so as to form an angle directed inwards. A section through them shows that the medullary tube is, in each, closed with a thick plate of bone at its end, and that the end of the wall of each portion is surrounded by a ring of hard new bone, which has completely coalesced with it. But no union has taken place between the masses of new osseous matter formed on each portion, although they are in close contact. *Hunterian.*

2954. The bones of a fore-arm, with the carpus and metacarpus. The radius has been fractured about three-fourths of an inch from its carpal end.

The portions are united firmly and smoothly, but the lower portion has been driven backwards, and towards the radial side of the upper portion. The radius is shortened half an inch, and the ulna, retaining its natural length, the carpus and hand are in consequence inclined to the radial side, and the ulna appears unnaturally prominent. There is an appearance, also, as if the styloid process of the ulna had been broken off and re-united in its natural position. *Hunterian.*

### 31. *Fractures of the Femur.*

2955. A femur, from a woman twenty-four years old, which was fractured through the base of the neck and the great trochanter. The portions are united smoothly, and with but little addition of bone. The neck appears to have been driven down between the trochanters; its axis is now nearly at a right angle with that of the shaft, and the head is below the level of the great trochanter.
2956. The upper part of a right femur, of which the neck was fractured through the plane of its junction with the upper part of the shaft. The great trochanter appears also to have been split down, its posterior part being pushed backwards; and probably the neck of the femur was driven in between the fragments. The parts are all very firmly united, with a large accumulation of bone about the trochanters. The neck of the femur is not altered in size or shape; but it is horizontal, and its upper margin is below the upper part of the great trochanter.
2957. The upper part of a left femur, fractured at the junction of its neck with the upper part of its shaft. The posterior fractured margin of the neck has been driven further in between the trochanters than the anterior margin has. It is possible, indeed, that the posterior part of the base of the neck was alone broken, and that its anterior wall was bent or cracked without displacement, for there is no trace of fracture on the

anterior surface, though the head is turned far backwards, and its lower margin is within five lines of the trochanter minor. There is a great accumulation of bone about the trochanters, and a large part of the trochanter major appears to have been broken off and firmly re-united.

2958. Sections of a specimen which, in external appearance, is very similar to the three last-described. It is placed here for comparison's sake; for, though the parts have nearly the same general form and mutual relations as in them, there is no trace of a line of fracture, nor any accumulation of bone, about the neck or the trochanters.

*From the Museum of Sir A. P. Cooper.*

2959. The upper part of a right femur, which was fractured through the base of the neck (external to the capsule of the hip-joint), and through the base of the trochanter major. The fragments are firmly re-united by bone, but the shaft is drawn upwards and forwards, and rotated outwards, so that the unbroken portion of the trochanter is half an inch behind and above the head of the femur, and the linea aspera looks straight inwards. The shaft is also at a right angle to the neck, and appears to have been in a state of permanent and extreme flexion.

*From the Museum of Sir A. P. Cooper.*

2960. A left femur, which was fractured through its upper part. The plane of fracture passed obliquely backwards, outwards, and downwards, through the anterior part of the base of the neck, below the lesser trochanter, and through the posterior half of the great trochanter. The portions are united firmly, though not closely, and with some eversion of the limb. There is a great accumulation of bone about the lesser trochanter and the posterior inter-trochanteric line.

*From the Museum of Robert Liston, Esq.*

2961. A right femur, which was fractured in two or more directions just below the trochanters. The parts are all firmly united, but with such distortion that the axis of the neck is directed downwards and inwards, forming an

angle of about  $60^{\circ}$  with the axis of the shaft. The texture of the whole bone is light, and very greasy.

*From the Museum of Robert Liston, Esq.*

2962. A left femur, fractured through its shaft, just below the lesser trochanter. Its portions are united smoothly and firmly, but with some shortening, and a prominent angle in front. The shape of the head and neck is altered, as by chronic rheumatism. *Hunterian.*

2963. Sections of the upper part of a femur, fractured obliquely below the lesser trochanter. The portions are united firmly, but the upper one is drawn upwards and outwards, so that they form an obtuse angle. Bone is accumulated in small quantity around them at the situation of the union; and, internally, the medullary tube is interrupted by a thin partition of compact bone, which lies in the plane of the fracture.

*Presented by Sir William Blizard.*

2964. A left femur, fractured in several directions through the upper part of its shaft and the base of the great trochanter. At the part where the shaft is broken no union has taken place; (the portions are artificially united). In the other directions, there are merely fissures of the bone with little or no displacement; at these, also, no reparative change appears to have taken place. *Hunterian.*

2965. A right femur, which was fractured obliquely through the upper part of its shaft. The portions are not united, though they appear to have been in exact apposition. A part of the lower portion suffered necrosis, and there has been an abundant accumulation of bone around its margins, as well as on the adjacent part of the upper portion. *Hunterian.*

2966. Part of a femur in which, after fracture through the middle of its shaft, necrosis of the ends of the fragments took place. The dead portions

were in process of separation, and new bone was abundantly produced on all the parts around them; but no union has been effected. *Hunterian.*

2967. A right femur, fractured at the junction of the upper and middle thirds of its shaft. The upper portion has been drawn forwards, and the lower one upwards; but they are firmly and smoothly united, with but little deformity, and the medullary tube is in both closed by layers of compact bone, which are continuous with the walls of the shaft above and below.

2968. A right femur, very slender, and having, from rickets, an unnatural curve forwards. It was broken very obliquely through the junction of the upper and middle thirds of its shaft; its portions are united firmly by intermediate bridges of bone, but with much deformity, the lower portion having been drawn upwards in front of the upper one. The ends of the fractured portions are sharp and uneven. *Hunterian.*

2969. A right femur, which was fractured very obliquely, from the front of the great trochanter, downwards and inwards. Firm re-union has been effected by new bone formed between the sides of the fragments; but there is considerable shortening and eversion of the limb, the lower part of the shaft having been drawn forwards and upwards, and turned so far outwards, that the back of the condyles looks directly inwards.

*From the Museum of Robert Liston, Esq.*

2970. A left femur, which was fractured transversely just below the junction of the upper and middle thirds of the shaft. The lower end of the upper portion was drawn forwards, and the upper end of the lower portion was drawn inwards, so that the fractured ends lay across each other, forming an angle of about  $140^{\circ}$ , and with a distance of from one to two inches between them; but they are united firmly by two strong intermediate bridge-like masses of bone.

*From the Museum of Robert Liston, Esq.*

2971. A left femur, of which the middle third of the shaft was broken into



several large pieces. These are all re-united very firmly, but with displacement, and consequent shortening and distortion of the limb. The lower end of the uppermost portion was drawn forwards, and projects, with a sharp point and a smoothly closed medullary tube, in front of all the rest. The lower portions were drawn upwards, backwards, and inwards, and the condyles were turned outwards. *Hunterian.*

2972. A left femur, of which the shaft was fractured just above its middle. The portions were widely separated, the upper one having been drawn forwards, and the lower upwards and backwards, but they are firmly united by a strong intermediate mass of bone. *Hunterian.*

2973. Section of a right femur, which was fractured transversely at the junction of the upper and middle thirds of its shaft. The end of the upper fragment has been drawn inwards, the lower one being at the same time carried upwards and outwards, and rotated, so that what was its internal surface looks straight outwards. In this position the corresponding surfaces of the shafts, overlapping each other nearly three inches, are united by an intermediate layer of bone from one-half to three-quarters of an inch thick, formed of cancellous texture with a thick wall of compact substance at each end. *From the Museum of Sir A. P. Cooper.*

2974. A short and slightly rickety right femur, which was fractured near the middle of its shaft. The lower portion has been drawn behind the upper one, but they are united firmly and smoothly.

2975. A left femur, affected by rickets, which was fractured a little below the middle of its shaft. The lower portion has been drawn behind the upper one, and nearly two inches upwards, but they are firmly and completely united by intermediate bone, and the ends of the medullary tube are closed.

2976. A right femur, of which the shaft was broken near the junction of the middle and lower thirds. Their portions considerably overlapped each



other, the lower one having passed far upwards behind the upper one, but they are united by a strong intermediate mass of bone, and though there is great shortening of the limb, there is no eversion of the condyles.

*Hunterian.*

2977. The lower part of a femur, which was fractured very obliquely from above downwards, and from behind forwards. The upper portion was driven more than three inches downwards in front of the lower one, and its sharp end must have penetrated the knee-joint, for it is now on a level with the condyles. An inch of this end has perished, and is surrounded by a groove. A slight degree of union has taken place by new bone formed on the adjacent surfaces. The articular surface of the condyles is superficially ulcerated.

*Hunterian.*

2978. A right femur, which was fractured obliquely below the middle of its shaft. A portion of muscle became fixed between the ends of the two fragments, but they united, though with a long and large channel passing obliquely from before backwards, and from below upwards, through the whole thickness of the shaft. In this channel, which is lined throughout by compact bone, the muscle, or its remains, lay when the patient died. The whole of the shaft is enlarged, and the lower articular surface is ulcerated.

*Presented by the Executors of William Long, Esq.*

2979. The femur of a deer, which was fractured transversely through the middle of its shaft. The portions were displaced to a distance of more than an inch from each other, but are united by two strong lateral bridges of new bone. The ends of the medullary tube are not closed.

2980. The right femur of a sheep, which was fractured near the middle of its shaft. Its portions are re-united, with much shortening, and a great accumulation of bone behind them.

*Hunterian.*

2981. A vertical section of the femur of a fowl, which appears to have been fractured near the middle of its shaft.

*Hunterian.*

3κ. *Fractures of the Patella.*

2982. A patella, with the ligamentum patellæ, and part of the quadriceps femoris muscle. The patella was fractured transversely, and its portions are nearly an inch apart, but are united by ligament attached to their anterior margins. *Hunterian.*
2983. The right femur and tibia of a great speckled diver (*Colymbus*). The preparation is placed here, because it was used by Mr. Hunter in his lectures to illustrate the subject of fractures of the patella.
2984. The bones of a lower extremity, with an apparatus of springs, &c., attached to the femur. These, also, were used by Mr. Hunter, in his lectures, to show how the extensor muscles adapt themselves, after a fracture of the patella has been united by a long band of ligament.—(See *Hunter's Works*, vol. i., p. 512.)
2985. The bones of a knee-joint, with the chief ligaments, dried. The patella was fractured transversely near its lower border, and its two chief fragments, as well as a small portion broken from the corner of the upper one, are united by a band of ligament about half an inch wide. The upper fragment is so enlarged by hypertrophy, that it equals the size of such a patella as would be well proportioned to the other bones of the knee-joint: the lower fragment is also enlarged, but probably in a less degree. *Presented by Sir William Blizard.*

3 L. *Fractures of the Tibia and Fibula.*

2986. A left tibia and fibula. The tibia is fractured in several directions near its upper end, and two of the fractures extend through its articular surface. No process of reparation has taken place. *Hunterian.*
2987. A left tibia and fibula, of which the former is obliquely fractured between three and four inches above the ankle-joint, the latter between two and three inches below the knee. A thin splinter has been broken off the back of the tibia, and a fissure extends into the ankle-joint. No process of reparation appears to have commenced. *Hunterian.*
2988. A tibia, which was fractured transversely about the middle of its shaft. Its portions are united firmly and smoothly, but with shortening and considerable lateral displacement, the lower portion deviating outwards.
2989. Part of a tibia, fractured through the middle of its shaft, and repaired smoothly, and with but little distortion. *Hunterian.*
2990. A left tibia and fibula, of which the former was obliquely fractured between three and four inches from the ankle, the latter between two and three inches from the knee. Both fractures are firmly united, with an equal degree of shortening; the lower portion of each bone has been drawn towards the other bone. *Hunterian.*
2991. A right tibia and fibula, fractured in nearly the same situations as those in the preceding specimen; small portions of each shaft have been detached at the seat of fracture. Firm union has taken place, but with considerable distortion and superficial deposit of new bone. The lower portion of the tibia is before, that of the fibula behind, the upper portion. *Hunterian.*

2992. A tibia and fibula, which were fractured just below the middle of their shafts. Each of the lower portions has passed far to the inner side of the upper one of the same bone, but they are united firmly, and the end of the lower portion of the fibula is fixed to that of the upper portion of the tibia.

*Presented by Sir William Blizard.*

2993. Parts of a tibia and fibula, which were fractured just below the middle of their shafts. The portions of each shaft are so placed that they form nearly a right angle with each other, the apex of the angle being turned forwards. Those of the fibula are united, with the fractured ends lying side by side; those of the tibia are not united, though they lie close together, and bone has been deposited around the extremities of each.

From a case of simple fracture.

*Hunterian.*

2994. Part of a tibia, which was fractured near the middle of its shaft. The portions were so placed as to form an angle of about  $120^{\circ}$ , with its apex turned forwards, and they are united by only a small portion of their adjacent surfaces. New bone has been formed on the surfaces of the extremities of both the portions, and especially in the angle behind them; at the anterior part of the angle one of the bones is rather deeply ulcerated.

The fracture was probably compound.

*Hunterian.*

2995. Section of part of a tibia, which was fractured near the junction of the middle and lower thirds of its shaft, and of which a splinter was broken off from the outer border. The portions are not united, but new bone has been formed upon the outer surface of their extremities.

From a case of compound fracture.

*Hunterian.*

2996. Two sections of the same tibia as that described in vol. ii., p. 46, No. 444. They exhibit incomplete union, a small portion only of the frag-

ments being in contact. The whole shaft appears to have been unnaturally vascular. The medullary tube, exposed by the fracture, is closed in by a thick layer of new bone. *Hunterian.*

2997. A vertical section of a tibia, of which the walls are irregularly thickened by deposits of bone upon their surface. These deposits are very hard, and have intimately coalesced with the original wall, the outline of which is but just discernible. The medullary tube, opposite to the chiefly thickened part of the wall, is filled with compact bone; the lamellæ of the cancellous tissue below it are thickened, while above it they are for the most part removed, and the medullary tube is filled with fatty substance. Just above the chiefly thickened part there is a slight deviation in the direction of the shaft, which, together with an oval aperture behind, make it probable that there was an oblique fracture which united with scarcely any displacement, but was followed by long-continued inflammation of the lower part of the shaft, and atrophy of the upper part.

*Hunterian.*

2998. A tibia, after a compound fracture through the middle of its shaft. The portions are firmly united, but with lateral displacement. The new bone is abundant and heavy; there is a cavity in its interior, and its surface is rough and porous, like that of new bone formed on bones inflamed. There is also a cavity between the ends of the united fragments, which probably opened externally through ulcerated integuments.

*Hunterian.*

2999. A tibia and fibula. The tibia was fractured near its lower end, and a large portion of the upper fragment perished, and is separated. New bone has been deposited on the shaft, around the necrosed portion, and both above and below the fracture, but no union is accomplished. The fibula was fractured near its upper end, and is firmly united, with a superabundance of new bone around it. New bone has also been deposited, in a thin layer, on many parts of its shaft, and in a large

quantity, opposite the fracture of the tibia, where the two bones were united. *Hunterian.*

3000. A tibia and fibula, which were fractured about two inches above the ankle-joint. The end of the upper fragment, and the greater part of the shaft above it, suffered necrosis. The surface of the shaft is rough, from the removal of portions of its external layers, and the limit between the dead and living bone, at its upper part, is not clearly marked. On the lower fragment, as well as on that part of the upper one which did not perish, new bone is deposited. The lower end of the upper fragment of the fibula is firmly fixed to the lower fragment of the tibia, and a considerable quantity of new bone has been formed about them. *Hunterian.*

3001. The lower end of a tibia, which was fractured. Part of its broken end appears to have exfoliated, and the adjacent part is covered with new bone. *Hunterian.*

3002. A tibia and fibula, which were fractured through the middle of their shafts. The upper portion of the tibia protruded through the skin and was sawn off, after which necrosis of the sawn extremity took place. The dead portion, which has exactly the same characters as those sometimes separated after amputations, has nearly exfoliated, and the adjacent surfaces are thickly covered with new bone, but no union has been effected.

3003. Portions of a fractured tibia. Parts of the ends of both portions suffered necrosis, and were in process of exfoliation. A large quantity of new bone has been formed on the surface of the adjacent parts of the shaft. *Hunterian.*

3004. A portion of the tibia of a boy, fourteen years old, including the whole thickness of the shaft, and measuring five inches and a quarter in length, which was sawn off in a case of compound fracture. It has marks of necrosis, and commencing exfoliation of a part of its surface.

The patient's leg was crushed by a wheel, and part of the tibia, below a fracture near its upper end, was exposed. Little was done for three weeks; then, the exposed

portion being found to have suffered necrosis, and the portion above it protruding, Mr. Evans excised this piece, including both those portions. In ten weeks the wounds were healed, and there remained "but little lameness, and very trifling deformity."

The case is recorded in the 'Lancet,' October 14, 1837, p. 87.

*Presented by Evan Edwards, Esq.*

3005. The tibia of a horse, which was fractured obliquely just below the middle of its shaft. Its portions are united firmly by intermediate new bone, and with but little shortening or displacement. There is an accumulation of new bone on the posterior, but none on the anterior, part of the tibia at the seat of fracture.

3006. The tibia and fibula of a fowl. The tibia was fractured obliquely through the middle of its shaft: its portions are united, with but little displacement or accumulation of bone. The fibula opposite the fracture is enlarged, and fixed to the tibia by a superficial deposit of new bone.

*Hunterian.*

3007. The tibia of a fowl, which was fractured almost transversely below the middle of its shaft. The portions overlap each other to a considerable extent, but are united firmly, and with but little accumulation of bone. The ends of the medullary tube are closed.

*Hunterian.*

3008. A fibula, very obliquely fractured through the lower part of its shaft, and united with but little displacement.

*Hunterian.*

3009. Part of a fibula, which was transversely fractured near the middle of its shaft. The portions overlap each other an inch and a half, and are half an inch apart; but they are united by a strong intermediate portion of rough and porous new bone, and they appear to have been unnaturally vascular, even far from the seat of fracture.

3010. Portions of a fibula, in which, after a compound fracture through the lower part of its shaft, necrosis of parts of both the fractured ends ensued. The dead bone is separated from the living by a shallow groove. New bone has been abundantly deposited upon both portions of the shaft.

*Hunterian.*



3 M. *Fractures of the Bones of the Foot.*

3011. The metatarsal bone and phalanges of a great toe, united by a great accumulation of bone about their articular ends. The last phalanx appears to have been fractured; perhaps the whole toe was crushed.

*Hunterian.*

3012. The metatarsal bone of a sheep, of which a great part of both the walls and the cancellous tissue has been destroyed by ulceration, or necrosis, or both, succeeding to a fracture through the middle of its shaft. The fractured portions are united, with considerable displacement.

*Hunterian.*

4. *Inflammation of Bone, with formation of New Bone.\**4 a. *Superficial Formation of New Bone.*

3013. Vertical sections of part of the femur of a young person, in which, in consequence of severe inflammation after fracture, a very thin layer of new bone has been formed on a considerable portion of the shaft. The new bone, like that described in vol. ii., p. 84, No. 554, has a close filamentous texture, and is soft, greyish, dry, friable, easily removed, and leaving the subjacent surface smooth and clean. At a short distance above the fractured end is a broad shallow groove, indicating that the end has perished; below the groove there is no deposit of new bone.
- Hunterian.*
3014. Portion of a tibia after fracture. The fractured end, and a large piece of the exterior of the shaft above it, suffered necrosis, and their exfoliation was nearly completed. The anterior surface of the sequestrum seems to have been inflamed before the necrosis, for its vascular canals and grooves are unusually large and numerous, and some new bone is formed on it. At a short distance from the part from which the sequestrum separated, a layer of grey, soft, dry, porous, longitudinally-grooved and nodulated

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\* Corresponding with Section A, in Sub-series 4 in the 12th Series, vol. ii., p. 82.

new bone is formed. A part of this has been scraped off to show its slight connection with, and the unchanged state of, the old bone. It is probable that this was a case of compound fracture, in which the protruded bone did not perish till some days after the injury. *Hunterian.*

3015. Sections of a fractured tibia, in which a portion of the fractured extremity suffered necrosis. Immediately above the sequestrum the bone is superficially ulcerated, but higher up a large quantity of new bone, like that last described, is formed upon its surface. *Hunterian.*

3016. A femur, of which a great portion of the shaft is covered with a thin layer of grey, brittle, friable, longitudinally-grooved, and superficially nodulated new bone, which in a few situations has begun, since it was dried, to crack and separate from the surface of the shaft. The rest of the shaft is healthy, except that the grooves and apertures for its blood-vessels are larger than usual. *Hunterian.*

3017. The opposite femur of the same person, similarly diseased. The deposits of bone have an almost exactly symmetrical arrangement on the two shafts. *Hunterian.*

3018. A tibia from the same patient. Considerable portions of the shaft are covered with a thin layer of new bone, like that on the femora, small pieces of which have scaled off and left the surface of the old bone smooth and apparently unaltered. *Hunterian.*

3019. A tibia and fibula, on the surfaces of which thin deposits of new bone have taken place. They are like those last described, but their texture is lighter, paler, and softer.

From a young negro, many more of whose bones were similarly diseased.

*From the Museum of Robert Liston, Esq.*

3020 The lower end of a tibia, nearly covered with a thin layer of new bone. *Hunterian.*

3021. A femur, of which the lower part of the shaft is enlarged by the superficial formation of new bone around it. The formation appears to have taken place in several distinct periods, for, at the lower part, there are many irregular deposits of nodules of finely-cancellous new bone, which may be separated from that which forms a more even layer around the shaft. Higher up, the middle of the shaft is a little enlarged by a thin smooth layer, which has completely coalesced with the original wall.

*Hunterian.*

3022. The other section of the lion's right femur, of which a description is given in vol. ii., p. 88, No. 564.

3023. Sections of the left femur of the same lion. Like the right femur, and with an exactly symmetrical arrangement, a large portion of its surface is covered with new bone, the structure of which is nearly all nodulated, hard, minutely cancellous, or, rather, like dried lung. The exposed part of the new bone is harder and of closer texture than that which lies more deeply; it is firmly fixed to the surface of the shaft, but the boundary between them is quite distinct.

*Hunterian.*

3024. The pelvis of the same lion. Large portions of the outer surface of each os innominatum are covered with new bone, like that formed on the femora and other bones. As on them, also, all the deposits are arranged on corresponding parts of each lateral half, with an exact symmetry. There is scarcely a point of osseous deposit on one side of the bone which is not precisely represented on the other. There is a similarly symmetrical deposit on the inner surface of each ischium, near the foramen ovale.

*Hunterian.*

3025. The right fibula of the same lion, similarly diseased.

*Hunterian.*

3026. A patella from the same lion, with deposits of new bone along the margins of its lower half, and a smaller quantity of the same on its upper border.

*Hunterian.*

3027. The right os calcis, from the same lion, with new bone, like that already described, formed abundantly on nearly all its surface. *Hunterian.*
3028. The left os calcis, similarly and exactly symmetrically diseased. *Hunterian.*
3029. One of the tarsal bones of the same lion, with some small nodulated formations of new bone on a portion of its surface. *Hunterian.*
3030. The pelvis of an old lion, who had lived long in England. Deposits of grey and finely cancellous bone, exactly like those in the preceding specimens, have been formed on several parts of its outer surface. They are quite irregular in their form and thickness, but are deposited with an almost exact symmetry on the corresponding parts of the two ossa innominata. Moreover, although the outlines and situations of the several deposits of new bone are too irregular for any accurate description, yet there is an almost exact resemblance between those formed on this pelvis and those on that last described, under No. 3024. In both alike, the chief deposits are on the outer surface of the ischia; in both, these surfaces are nearly covered with similar and symmetrical new bone, and in both, the same parts are left uncovered; namely, the posterior and upper borders, the tubera, small spaces of like size and form behind the notches of the acetabula, and small spaces behind the foramina ovalia. In both pelvises, also, there is scarcely any new bone formed on the outer surface of the ossa pubis, except on that part which is near the acetabulum; and, in both, what is here formed is alike continuous with similar considerable quantities formed on the lower parts of the ilia and the upper parts of the ischia. The new bone formed on the outer surface of the ilia is in numerous detached spots and lines; but these, though having no apparent regularity of arrangement on either pelvis, are yet arranged almost exactly alike on both, leaving, in both, the upper and anterior borders of the acetabula free, and being especially attached to prominences on which muscles had strong attachments. And, lastly, though there is but one spot on the inner surface of each side of each

pelvis on which there is any new bone formed, yet this spot is the same in both, namely, on the superior and inner margin of the foramen ovale.

*Hunterian.*

3031. The last two lumbar vertebræ and a part of the sacrum of the same lion.

*Hunterian.*

3032. The right scapula and humerus of a lion. Large masses of bone, of light and porous texture, have been formed about the notch of the scapula and the lesser tuberosity of the humerus.

*Hunterian.*

3032A. The left scapula and humerus of the same small feline animal, of which the corresponding parts of the other side are described in vol. ii., p. 92, No. 575. New bone, of light porous texture, like that in the preceding specimen, is formed upon the margins of the glenoid cavity, the acromion, and the lesser tuberosity of the humerus. And the deposits of bone in this specimen, though smaller than those on the corresponding bones of the right side, are arranged in similar spots, and have the same general form; those on the opposite sides of the joint have not coalesced, though they have nearly met.

*Hunterian.*

3033. The left tibia of the person whose right tibia is described in vol. ii., p. 89, No. 565. Both tibiæ are similarly and symmetrically diseased; both are nearly covered with new bone, which has become hard and heavy, and is intimately connected with the surface of the old bone. In many places, also, the longitudinally grooved and nodulated surface which the new bone at first had, is nearly smooth and level; the apertures for blood-vessels passing into and out of it being also reduced in both size and number, it has acquired more nearly the appearance of the surface of the old bone, and thus these parts look as if there had been an enlargement of the shaft by interstitial thickening of its walls.

*Hunterian.*

3034. A tibia, of which the middle half of the shaft is covered with new bone, which has made rather less progress in becoming hard and smooth than

that in the preceding specimen has. Much of it retains the darker grey and more brittle character, and the minutely cancellous lung-like structure, of more recent formations of new bone. *Hunterian.*

3035. A right femur, of which a large portion of the shaft is thinly covered with new bone, most of which, like that in the preceding specimens, has become hard, heavy, and smooth. This is, especially, the case on the inner aspect of the femur, where also the new bone is transversely marked by three sets of triple grooves, in which the large vessels of the periosteum lay. Many parts of the new bone retain the longitudinally-grooved and porous or finely-cancellous texture which is shown in that formed on the femora marked 3016, 3017; and what was said of the similarity of arrangement of the osseous deposits on the two lions' pelves, Nos. 3024 and 3030, is, in a great measure, true of the deposits on these femora. Though following no apparent order in any case, their arrangement is very like in all; in all, the chief accumulation is on the inner aspect, the least on the outer aspect, of the shaft; in all, the popliteal surface of the femur is nearly free: and even in the outline of the morbid deposits there is some resemblance. A like resemblance, also, may be noticed in a comparison of the new bone on the following tibiæ and fibulæ. *Hunterian.*

3036. A femur, of which the greater part of the shaft is enlarged and increased in weight by the superaddition of new bone, which was probably, originally, like that in the preceding specimen, but has now become uniformly hard, heavy, and nearly smooth on its surface. The neck forms an unusually obtuse angle with the shaft of the femur.
3037. Vertical sections of a tibia, apparently from the same limb as the preceding femur. It is similarly enlarged, and the sections show that the thickened part of the wall is of uniform texture. The outer surface of the whole shaft is nearly smooth, but perforated by very numerous and close-set apertures for blood-vessels, and variously grooved where the larger branches of the periosteal vessels lay on it.



3038. The lower end of a femur, of which the shaft is enlarged, chiefly by the superaddition of new bone. A transverse section shows that the new bone forms a layer from two to four lines in thickness, the inner surface of which has, for the most part, intimately coalesced with the circumference of the shaft, but may be clearly traced all round it. The structure of the new bone is more hard and compact than that of the old bone; its outer surface is very coarsely porous and rugged. The original shaft, so far as it is shown in the transverse sections, is unaltered, but is very greasy. *Hunterian.*

3039. A tibia, from the same person as the femur last described. Nearly the whole shaft is enlarged, and much increased in weight. Its surface is, for the most part, smooth, superficially marked by transverse grooves for blood-vessels, but perforated by few vascular apertures. The surfaces of the sections show that the enlargement is due to the superaddition of new bone, which has become as hard and compact, as little vascular, and nearly as smooth, as the old wall with which it has intimately coalesced. *Hunterian.*

3040. The lower end of an humerus, of which the shaft is irregularly enlarged by hardened new bone. Its surface is grooved and perforated by canals for blood-vessels. *Hunterian.*

3041. A femur, of which the upper half of the shaft is enlarged, especially on its inner aspect. There is a similar but slighter enlargement of the lower third of the shaft. The surfaces of the thickened parts are smooth, and very finely perforated, and the posterior part of the shaft bears the transverse impressions of the blood-vessels of the periosteum. The increase of weight is not proportionate to the enlargement. *Hunterian.*

3042. A femur, of which the lower third is slightly enlarged. The posterior surface is covered with a thin layer of new bone. On the outer aspect of the bone, just above the outer condyle, there is a deep round impression, as if part of the wall had been violently driven in. *Hunterian.*



3043. The lower half of a femur, considerably enlarged. The enlargement appears to be chiefly due to the external formation of a thick irregular layer of bone, which has completely coalesced with the original shaft, and has a finely perforated surface, marked behind by broad transverse vascular impressions. *Hunterian.*

3044. A tibia and fibula, enlarged by the formation of new bone on nearly every part of their shafts. Nearly all the new bone has become very hard and heavy; it has completely coalesced with the old bone, and a great part of its surface has become smooth. The part of the new bone which has made most progress in the process of hardening is that on the middle third of the inner surface of the tibia, on which also there is, as in all the specimens of the like kind, the largest accumulation of new bone. Here it forms a gradually elevated, uneven, and almost knotted swelling, the surface of which is very hard, and perforated by few apertures for blood-vessels. It is such a swelling as is described as an ossified syphilitic node; but the same disease extends in a less degree over nearly all the tibia and fibula. *Hunterian.*

3045. A tibia, on which there is a genuine syphilitic node, *i.e.* a small circumscribed and gradually elevated swelling on part of the middle of the internal and external walls, formed by superaddition of new bone which has become very hard and smooth. The adjacent surface is deeply grooved for the passage of the vessels of the bone; but, except where the node is, no new bone appears to have been formed.

3046. A tibia, with a similar but larger node extending over and a little beyond the middle third of its inner and outer surfaces.

3047. Vertical sections of a tibia, exhibiting a recent formation of new bone on the surface of a node which formed on the middle third of the inner wall of the shaft, and became hard and smooth, as in the preceding specimens. This new bone has the usual grey colour, with a brittle,

friable, dry, finely cancellous texture, and a longitudinally grooved and perforated surface.

3048. A tibia, exhibiting a similar formation of new bone and superficial ulceration, on a node formed in the lower third of its shaft. The new bone is porous and soft.

3049. A tibia and fibula, diseased like No. 3044 and other preceding specimens. The surface of part of the indurated new bone has the coarsely reticular arrangement commonly seen near syphilitic ulcers of long bones; and near the middle of the inner surface of the tibia there is a small round syphilitic ulcer penetrating deeply through the new bone, and surrounded by an irregular shallow ulceration of the adjacent part. The specimen thus forms a connecting link between the preceding (in most of which the disease was, doubtless, of syphilitic origin) and many, to be presently described, in which ulceration is the most striking character of the syphilitic disease.

*Hunterian.*

3050. A fibula, of which nearly the whole shaft is enlarged by the superaddition of new bone, which has become hard, compact, and heavy, and is inseparably united to the surface of the shaft. The chief addition is on the part which was next to the shaft of the tibia; at this part the surface of the new bone is irregular, with thick, short, imbricated plates of various form; on its outer surface it is nearly smooth, but impressed superficially by transverse grooves for blood-vessels.

*Hunterian.*

3051. A fibula, of which the middle half of the shaft is much enlarged by external deposit of new bone, which is hard and compact, and presents an arrangement nearly similar to that in the preceding specimen.

*Hunterian.*

3052. A fibula, of which the whole length of the shaft is similarly, but somewhat less, diseased.

*Hunterian.*

3053. A fibula, of which the whole length of the shaft is covered with an irregular deposit of indurated new bone. At about the middle of its posterior and inner surface there are very broad and distinct transverse smooth impressions, over which blood-vessels passed. *Hunterian.*
3054. A fibula, a great portion of the shaft of which is much enlarged, and covered with irregular plates of hard new bone. *Hunterian.*
3055. A fibula, curved as if from hypertrophy with elongation, and slightly enlarged by external deposits of new bone. *Hunterian.*
3056. A fibula, of which the shaft is unequally enlarged by abundant deposits of new bone upon various parts of its surface. The new bone, as in the preceding specimens, is hard and heavy, and in many parts nearly smooth on its surface.
3057. The upper part of a skull, thickened, indurated, and having thick deposits of hard bone, with nodulated and fasciculated surfaces, on the interior of the frontal and parietal bones.
3058. Part of the left scapula of an old and very large lion. The acromion process is covered with thick, irregular, porous, and channelled new bone, which overhangs its margins, and is intimately united to its surfaces. The other parts are healthy. *Hunterian.*
3059. The left ulna of the same lion. It is enlarged, and its surface is rendered uneven by deposits of new bone, which have completely coalesced with the original wall, and have become very hard, heavy, compact, and smooth on their surfaces. Nearly the whole shaft is thus covered, and part of the new bone projects in sharp ridges. *Hunterian.*
3060. The right ulna of the same lion, similarly and symmetrically diseased. *Hunterian.*

3061. The right femur of the same lion, similarly diseased, but to a greater extent. The new bone is more abundant; like that on the ulnæ, it is very hard, compact, and heavy; on the anterior part of the shaft its external surface is nearly smooth; on the posterior part it has an irregularly laminated and knotted arrangement, and portions of it project in sharp uneven ridges. *Hunterian.*

3062. The right femur of the same lion, similarly and symmetrically diseased. *Hunterian.*

3063. The left tibia and fibula of the same lion, similarly diseased. The interosseous ligament is ossified in nearly its whole length, and at the lower part the masses of osseous substance formed on each of the bones have coalesced. *Hunterian.*

3064. The right tibia and fibula of the same lion, similarly diseased, and exhibiting a similar exact symmetry in the arrangement and structure of the new bone.

If these specimens be compared with Nos. 3023 to 3030, it will appear that, as in the specimens from the human body, the new bone, at first porous, vascular, brittle, friable, grey, and easily removed from the surface of the old bone, has become hard, very dense and heavy, with few traces of vascularity, yellowish, smooth on its surface, and inseparably united with the shaft beneath it. The new bone on the acromion of the scapula of this lion has so much resemblance to that on the pelvis and other bones of the other two lions, that it is probable that all these specimens exhibit only a later stage of the same disease, as is shown in an earlier state, in the preceding specimens, Nos. 3023 to 3030. This probability is increased by the similarity of the arrangement of the accumulations of new bone on the corresponding bones of the different lions. This is especially evident in a comparison of the femora.

*Hunterian.*

3065. Two metacarpal bones of a lion, probably the same as that from which the preceding bones were taken. They are united by new bone deposited on their dorsal surfaces and borders. *Hunterian.*

3066. The left tibia and fibula of a young lion. They are united by new bone

formed on the adjacent borders and surfaces of their lower halves. The rest of their shafts and their articular surfaces are healthy. *Hunterian.*

3067. The bones of the metacarpus and fore-foot of a horse. The corresponding ends of the metacarpal bone and first phalanx are surrounded by thick irregularly nodulated growths of porous and delicately cancellous new bone. The growths from the respective bones, though closely approximated, have not coalesced, and the articular surfaces are sound.

3068. The bones of the leg of a horse. The corresponding extremities of the first and second phalanges, and the upper part of the metatarsal bone, are covered with small, rough, nodulated masses of new bone, like that in the last described specimen, but harder and heavier. The os cuboides and cuneiform bones, similarly diseased, are firmly anchylosed to the metatarsus, by the coalition of the portions of new bone extending from each across the joints. *Presented by — Freeman, Esq.*

3069. The phalanges of the foot of a horse, covered with large, rough, heavy, coral-like masses of finely cancellous and porous new bone, and firmly anchylosed by the coalescence of the portions of bone deposited on each. On the anterior surfaces and sides of the bones the new bone forms masses, which are in parts upwards of an inch in depth; on the posterior surface it is much less abundant. On the anterior surface of the new bone, on the second and third phalanges, there is a nearly smooth broad groove, formed perhaps by ulceration.

*From the Museum of Joshua Brookes, Esq.*

3069A. The metatarsal bone of a horse, around the lower end of which are several rough growths of new bone, like that last described, but much smaller, and more scattered. The corresponding articular surface having been deprived of its cartilage, half of it is covered with a hard porcelain-like substance, deeply grooved by the subsequent action of the joint.

*From the same Museum.*

3070. The first phalanx of the same limb. A very large growth of new bone, irregularly knotted, and with a nearly compact surface, is attached to the inner margin of its proximal extremity; and others of smaller size surround its articular border. Its articular surface has undergone changes similar to those of the metatarsal bone. *From the same Museum.*

3071. The metacarpal bones and first phalanx of a horse. Their adjacent extremities are surrounded by a large disc-shaped growth of new bone, by which, moreover, they are firmly ankylosed. The surface of the new bone is smoother than in the preceding specimens, especially at the anterior part; but it is equally porous, and its general characters are the same. The adjacent borders of the former articulation are barely discernible. *From the same Museum.*

3072. The last two phalanges of a horse's foot, with the sesamoid bones, closely united by bone, and with new bone, like that in the preceding specimens, on their surfaces. The upper articular surface of the second phalanx is healthy, but a large quantity of bone has been formed around it, and especially on the inner side of it. *From the same Museum.*

3073. The phalanges of a pony's foot, with a large quantity of new bone formed in rough and hard, finely cancellous, and porous masses upon their surfaces, and especially around their articular extremities. The articulation between the first and second phalanges is healthy, that between the second and third is obliterated by complete bony union of its surfaces; the sesamoid bone is also fixed to it by new bone. *Hunterian.*

3074. The phalanges of the foot of a horse, similarly but more extensively diseased. The deposits of new bone are especially abundant at the angles of the last phalanx. Here, and at the front of their articulation, the second and third phalanges are united by the new bone; by the side of the second phalanx is a large and deep cavity, like that of an abscess, surrounded by new bone. *Hunterian.*



3075. The last phalanx of the foot of a horse, at the posterior angles of which, in consequence of long-continued inflammation with *greasy heels*, a large quantity of new bone has been produced. In structure the new bone resembles that in the preceding specimens. It forms two long and thick, hard, coral-like processes, directed backwards and upwards in the plane of the lower surface of the phalanx. *Hunterian.*
3076. A large irregular mass of new bone, from the foot of the same horse. It has the same structure as that on the phalanx. *Hunterian.*
3077. Several phalanges of the toes of a large seal, thickened and covered with irregular deposits of hard and heavy new bone. The deposits are for the most part nodulated, and are most abundant at the borders of the bones; the plantar surfaces of nearly all are smooth and healthy. *Hunterian.*

4 b. *Deposits of Bone under Ulcers of the Integuments.*

3078. Part of a tibia, the lower end of which is considerably enlarged, and bears on its inner wall, just above the epiphysis and malleolus, a circumscribed oval elevation of soft and brittle new bone, with a slightly concave, finely porous surface, and an abruptly rounded margin overhanging the adjacent part. Around it new bone has been abundantly formed on both the shaft and the epiphysis, but the whole bone, which is that of a young person, is very light. The sharply circumscribed elevations of bone in this and the following specimens were, doubtless, formed beneath chronic ulcers of the integuments. *Hunterian.*
3079. A nearly similar specimen, in which the new bone has become heavier and harder. *Hunterian.*
3080. A nearly similar specimen, except that the circumscribed elevation of new bone has (like the more general and diffused formations of new bone shown in preceding specimens) become very hard, compact, and heavy.



Though retaining its original form, it has lost its porous, finely cancellous texture, and most of the vascular apertures by which its surface was perforated are closed. It is probable that the ulcer, beneath which the growth of bone was formed, had healed over it. There is a general growth of new bone, which has also become hard, over all the posterior surface of the tibia. *Hunterian.*

3081. A similar specimen, but with more general enlargement of the tibia.

*Hunterian.*

3082. A tibia, of which nearly the whole of the shaft is considerably enlarged and increased in weight by the external deposit of new bone. On the middle half of the anterior aspect of the enlarged tibia there is also an oval circumscribed accumulation of hard new bone, with a flattened, very rough surface, and slightly overhanging margins. It is like the preceding, but much larger, for it measures seven inches, and two inches and a half, in its diameters. The rest of the enlarged tibia has a nearly smooth surface.

3083. The fibula from the same limb. The corresponding part of its shaft is much enlarged and flattened, especially on the side which was directed towards the enlarged tibia.

3083A. A tibia and fibula, thickened and enlarged through nearly their whole length, with the formation of new bone on their surfaces. On the inner surface of the lower half of the tibia there is a slight elevation of an oval form, with well-defined borders, and a flat, but rough and finely porous, surface. Over this there was probably a large ulcer of the soft parts of the limb, which, by long continued irritation, produced, also, the general enlargement of the bones. *Presented by Sir William Blizard.*

3084. Part of a fibula, the lower half of which is enlarged and thickly covered with new bone, which is especially accumulated on one circumscribed spot, just above the malleolus. *Hunterian.*

4c. *Inflammation of Bones producing Expansion of their Walls.\**

3085. A section of the femur described in vol. ii., p. 100, No. 596. The whole shaft is enlarged, but it is comparatively little increased in weight. Its surface is uneven, by the irregular deposit of new bone, and on its posterior aspect there are transverse grooves in which the periosteal blood-vessels ran; over a part of one of these, in the lower third of the shaft, a broad bridge of bone is formed. The cut surfaces show that the increased thickness of the walls is chiefly due to the separation and outward-expansion of their component layers. A coarse cancellous texture is formed between the separated layers, traces of which, however, may be seen in the upper and lower parts of the shaft. The lamellæ composing this new cancellous tissue are thick and hard, contrasting strongly with the peculiarly delicate and brittle texture of the cancellous tissue in the medullary tube.

3086. A tibia, the shaft of which is enlarged without a corresponding increase of weight. In its general external characters it so exactly resembles the femur last described, that it may be believed to be from the opposite limb of the same person, and to have the same change of structure within. In its surface, especially on its posterior part, there are several very large apertures and grooves for blood-vessels; the channel for the great medullary artery is nearly twice as large as is natural.

3087. Vertical sections of a tibia, of which nearly the whole shaft is enlarged and increased in weight by the external addition of new bone, and by the thickening of its walls. Its surface is hard, and nearly smooth, but marked by grooves and large apertures for the passage of blood-vessels.

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\* See, for the general description of this process, vol. ii., p. 97.

In its general appearance it resembles the two specimens just described; and the cut surfaces of the sections show, in different parts, that, together with the external formation of new bone, the lamellæ of the walls have been separated or expanded. The walls consist now of a hard and coarse cancellous tissue, whose largest plates lie longitudinally, as in the femur last described; but in this specimen the thickening and induration, with partial consolidation of the lamellæ composing the new cancellous tissue of the walls, has made more progress, so that in some parts the walls are nearly solid, exhibiting only traces of the cancellous texture which succeeded to the separation of their lamellæ. The medullary tube is a little narrowed by the expansion of the walls; its tissue is healthy, except in that its cancelli are thickened opposite the most diseased part of the walls.

3088. A vertical section of a tibia, described in vol. ii., p. 100, No. 597. It exhibits a further stage in the progress of that consolidation of the cancellous tissue of the expanded walls and medullary tube, which is shown less advanced in the last preceding specimen. The lamellæ of the cancellous tissue of the medullary tube are so uniformly thickened, and the cancellous spaces so diminished and obliterated, that the whole of the tibia appears of nearly uniform texture; yet traces may be discerned of the old walls, expanded into separate layers, and from half to three quarters of an inch in thickness. At the upper part of the shaft is part of a large chambered cavity, which probably contained pus, and opened externally through the opposite wall of the tibia; and there are some smaller similar cavities in other parts of the medullary tissue.

*From the Museum of Robert Liston, Esq.*

3089. A vertical section of the femur which is described in vol. ii., p. 101, No. 598. The tissue of the walls, after expansion, has been consolidated into a nearly uniform substance, as heavy, hard, and almost as compact, as ivory. The consolidation is less complete below than in the the upper half of the shaft: in the former situation the walls are three quarters of an inch thick, and two-thirds of their inner part consist of

coarse cancellous tissue, like that seen in the earlier stages of this disease, as in Nos. 3085 and 3087: of the outer wall in this situation part is similarly coarsely cancellous, but a greater part is solid. The medullary tube is narrowed by the encroachment of the inner layers of the walls, and all the inner part of the walls of the shaft is covered with hard coarsely laminated new bone. *Presented by Sir William Blizard.*

3090. The upper half of the right femur of the person from whom the section of the left femur last described was taken. It is similarly diseased, and has all the same external characters.

*Presented by Sir William Blizard.*

3091. Section of a left femur, part of which is described in vol. ii., p. 101, No. 599. By disease like that shown in the last preceding specimens, the shaft, beginning to enlarge below its upper third, and gradually increasing, is between eight and nine inches in circumference. Its surface is made very uneven by the formation of new bone on it; and, just above the back parts of the condyles, there are deep and irregular syphilitic ulcers; elsewhere the surface of the enlarged part is nearly smooth, but grooved and perforated for numerous blood-vessels. In the upper half of the enlarged part of the shaft, the tissue is uniformly almost solid, and very hard and heavy, like that of the tibia No. 3088. Only imperfect traces of the cancellous tissue of either the medullary tube or the expanded walls here remain; but in the lower half of the enlarged part, the texture of the expanded walls, though portions of them are nearly solid, is not so hard and heavy, and the greater part of the cancellous tissue of the medulla has its lamellæ only more or less thickened: they are not here consolidated, but the various degrees of thickening show very well the mode in which the consolidation is gradually effected.

3092. A tibia, apparently from the same limb as the femur last described. The whole shaft is similarly and equally enlarged, and probably by the same disease, though its tissue is somewhat less heavy. Its articular surfaces are healthy.

3093. The skull of a Peruvian, in which all the bones of the face, as well as the frontal and the adjacent parts of the sphenoidal and parietal bones, are in a remarkable manner enlarged and thickened. The nasal fossæ and the orbits are nearly closed up, the superior maxillary bones, and the orbital portions of the malar and frontal bones, having grown into great knobbed and tuberculated masses, in which their original form can hardly be discerned. The adjacent smaller and thinner bones, namely, the lachrymal, and the orbital and vertical plates of the ethmoid, are diseased in the same manner, and in a corresponding degree. Of all the bones seen in the anterior aspect of the face, the left nasal bone, and the orbital processes of the malar bones, are alone unaffected. The hard palate is similarly diseased; its arch, and nearly all the alveoli, are obliterated. The posterior part of the vomer is half an inch in thickness, and the affection has extended in a slight degree to the pterygoid processes of the sphenoid bone. The great alæ of the sphenoid, all the frontal portion of the frontal bone, and the anterior parts of the parietal bones, are similarly diseased; but the posterior half of the skull is healthy. The lower jaw is enormously enlarged: at its right angle, and in the greater part of its right half, it measures upwards of five inches in circumference, and all but three of its alveoli are closed up. The disease has affected its right half more than its left half, extending to the margin of the right condyle, but leaving the left condyle and coronoid process healthy; and the same preponderance of the affection of the right side is observed, though in a less degree, in the other bones of the face and skull.

The external surface of all the bones thus diseased is more or less coarsely knotted and tuberculated; it is hard and dense, and minutely perforated, for the passage, probably, of blood-vessels. A section of the lower jaw shows that its interior is composed of an almost uniformly hard and compact but finely porous bone. Traces of the original wall of the jaw are discernible nearly an inch beneath the surface of the most enlarged part, but its medullary cavity is filled up with the same kind of osseous substance as that which is outside the trace of the wall.

On the whole, the change in this jaw most resembles those which, as in the preceding specimens, are produced by the expansion of part of the

walls of a bone, and the filling up of the spaces thus formed, as well as of those in the original cancellous tissue.

Compare with this specimen No. 3236A., in which a disease, apparently similar, has given rise to growths like tumours in the orbits.

*From the Museum of Joshua Brookes, Esq.*

3093A. The humerus of an ostrich, nearly the whole shaft of which is considerably enlarged and increased in weight. Its external surface is smooth, and, in parts, finely perforated for the passage of vessels.

*Hunterian.*

3094. Two of the carpal bones of a large bird, irregularly enlarged about the middle of their shafts.

*Hunterian.*

4 d. *Inflammation producing Consolidation of the Cancellous Tissue of Bone by thickening and coalescing of the Lamellæ.*

3095. A longitudinal section of a femur, other sections of which are described in vol. ii., p. 103, No. 601. The shaft has an unnatural curve forwards, from rickets. Its lower half is enlarged by increase of its cancellous tissue, and a thin external formation of new bone at the posterior part. At the middle of the shaft, in the situation of its chief curvature, there is no increase of size, nor any change of texture in the walls, but the cancellous tissue is in two portions, one nearly two inches, the other an inch, long, and both of irregular outline, consolidated into masses of ivory-like bone. The larger of these has on one side coalesced with the inner surface of the walls, and the boundary-line between them cannot be discerned; on the other side a portion of cancellous tissue, not quite consolidated, remains between it and the walls. In all the cancellous tissue between and around these completely consolidated portions the lamellæ are thick and hard, and the spaces between them are in a corresponding degree encroached upon, so that in these parts (as in some of the foregoing specimens) may be seen the progress of that change by which, finally, complete consolidation of the cancellous tissue is effected. The



cancellous tissue in the upper and lower thirds of the shaft is healthy and peculiarly delicate: the walls also in both these parts are healthy.

*Hunterian.*

### 5. *Suppuration in Bone.*

3096. The bones of a knee-joint, with the adjacent parts, dried. There is a large cavity in the head of the tibia, formed by the expansion and growth of its walls, in consequence of a collection of matter in its cancellous tissue. The walls of the cavity are, in most situations, thin, and are formed in part of bone, in part of membrane; its shape is nearly oval; it measures six inches from above downwards, and four inches across; its external surface is smooth and nearly even, its interior rather less so; it has grown chiefly to the outer side, and the upper part of the fibula is lodged in a deep groove in the wall of the cyst. The popliteal artery crosses over the posterior wall of the cavity, and many large branches from it ramify on the walls. Anteriorly there are several large apertures in the walls of the sac through which the matter was discharged. The articular surface of the tibia and the other parts of the knee-joint are healthy.

*Hunterian.*

3097. Part of a tibia, in the upper third of which there is a cavity opening in front, and probably into the knee-joint. The walls of the shaft are irregularly expanded and enlarged around the cavity, and the articular surfaces are ulcerated. The cavity may have been that of an abscess.

*Hunterian.*

### 6. *Ulceration of Bone.\**

3098. The lower end of a femur, and the upper end of a tibia, exhibiting the effects of the pressure of a popliteal aneurism. The posterior wall of

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\* The specimens are arranged in correspondence with those described in vol. ii., p. 104, &c.



each bone is superficially ulcerated, and around the ulceration a thin layer of new bone is irregularly deposited. *Hunterian.*

3099. Part of a femur, in which there is superficial ulceration of all the posterior surface, from the condyles to the division of the linea aspera. At the upper part the ulceration presents exactly the appearance of worm-eaten wood; below and around it, and in some situations among the interstices of the small ulcerated apertures, new bone is irregularly deposited.

From a patient who died with sloughing of the foot, in consequence of the pressure of a popliteal aneurism. The bones of the leg are preserved in No. 710.

*Hunterian.*

3100. The lower part of a femur, similarly, and from the same cause, diseased in the portion corresponding to the popliteal space. Its whole tissue is very light, and the articular surfaces of the condyles appear to have been superficially ulcerated. *Hunterian.*

3101. The lower part of a femur, on the posterior surface of which there is an oval ulcerated excavation, with a border of new bone, the consequence of the pressure of a popliteal aneurism. *Hunterian.*

3102. The upper part of a femur, probably from the same limb as the preceding specimen. There has been superficial ulceration of portions of the posterior and inner parts of the neck, and of the shaft, for about four inches below the trochanter minor. New bone is deposited irregularly around the ulceration, and in considerable quantity upon the anterior surface of the corresponding part of the shaft. The vascularity of all the rest of the shaft was increased. *Hunterian.*

3103. The upper part of a femur, of which the inner aspect of the shaft is superficially ulcerated. Around the ulceration are thin irregular deposits of new bone. Independently of this superaddition, the walls are increased

to a thickness of from four to six lines, and the medullary cavity is proportionally diminished in diameter. *Hunterian.*

3104. A clavicle, superficially ulcerated in nearly every part. Where ulceration has not taken place, new bone has been deposited upon the surface. *Hunterian.*

3105. An os innominatum, superficially ulcerated upon and around that part of its anterior border over which the psoas and iliacus muscles passed. Around the ulceration new bone is, in a few places, irregularly deposited. The changes were connected with the continued contact of the matter of a lumbar abscess. *Hunterian.*

3106. A tibia, on the anterior wall of which there is a long oval superficial ulceration. The ulcerated surface is finely cancellous and porous. Around it new bone is irregularly formed upon the surface of the shaft; and it is probable that the ulceration, before it reached the surface of the tibia, had destroyed a layer of similar new bone which covered the part now exposed. *Hunterian.*

3107. A similar specimen. *Hunterian.*

3108. Part of a fibula, nearly the whole of which is enlarged and covered with hard new bone. A large portion of its outer surface is superficially ulcerated; probably, as in the preceding case, after the ulceration of some new bone which covered it. *Hunterian.*

3109. The upper part of a skull, the inner table and diploe of which, on the left side, were extensively ulcerated, in connection with several abscesses which formed in the cerebrum, after a blow on the head. [See No. 2064, vol. iv., p. 113.] The ulceration is rather more extensive in the diploe than in the inner table, in which it seems to have made progress in broad, curved, and tortuous grooves, which have left many portions isolated. The base of all the ulcerated part, and the remaining

portions of the diploe, are hard and nearly smooth. In two small round apertures the ulceration has also extended through the outer table; the rest of the exterior of the skull is healthy.

*From the Museum of John Howship, Esq.*

### 6 a. Syphilitic Ulceration of Bone.\*

3110. The left scapula of a man, in whom many bones, as well as this, were affected by syphilis. The femur and tibia in Nos. 559, 560, the clavicle in No. 628, and the humerus, ulnæ, and os frontis next following, are all from the same patient, and exhibit the results of what appears to be the most frequent form of syphilitic inflammation and ulceration of bones. The acromion and border of the spine of the scapula are irregularly thickened and tuberculated by hard new bone formed on their surfaces. The new bone presents, in many parts, a coarse reticular arrangement, as if bundles of bony fibres, of various size and length, and raised upon the surface, were interlaced. In some few places there are small ulcers in such bone. These form round pits, and little vertical channels, of various depths, surrounded by hard and finely cancellous or porous bone; and several of them have made minute apertures through the whole thickness of the acromion. A small quantity of new bone is formed on the surface of the glenoid cavity, and its anterior margin is ulcerated. *Hunterian.*

3111. The humerus of the same limb. The middle of its shaft is enlarged by an irregular external deposit of new bone, which has an uneven, but not nodulated, porous surface, and a dense texture. It has completely coalesced with the subjacent wall. *Hunterian.*

3112. The frontal bone of the same patient, in which are two ulcers, which appear to have commenced in portions of bone previously thickened and tuberculated. *Hunterian.*

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\* A general description of the forms of Syphilitic Ulceration of Bone is given in vol. ii., p.112.

3112A and B. The ulnæ of the same person, both of which have the greater parts of their shafts covered with similar but thicker deposits of new bone, arranged on each in a nearly symmetrical manner. The new bone is nodulated, fissured, and laminated, and probably was formed at a later period than that on the humerus; it presents scarcely any of the reticular arrangement which the new bone on the acromion has, and, probably, could not be distinguished from new bone formed in common inflammation. Several small ulcers (not symmetrically arranged) penetrate, in nearly round or oval holes, through the new bone, and have extended beneath it to the subjacent walls of the ulnæ, on the surface of which they have spread in sharp-edged and irregular shallow pits and channels. The sections of one of the ulnæ show that its cancellous tissue was healthy, but that the vascular canals in its walls were very large, and that its surface beneath the new bone was quite rough, as if it had been diffusely ulcerated even where there are no ulcerated apertures in the new bone.

*Hunterian.*

3113. A fibula, the greater part of which is covered with hardened new bone. Some of its surface is reticulated, and through this part, on the outer aspect, an oval syphilitic ulcer has penetrated deep into the substance of the subjacent shaft. The walls of the ulcer are very irregular: they are formed of hard, but brittle and finely cancellous, bone, and the ulcer extends at its upper part, burrowing under the surface.

*Hunterian*

3114. Part of a tibia. The lower third, after having been enlarged by super-addition of new bone, has been penetrated, on its inner surface, by numerous close-set, large, and deep ulcers, chiefly of round and oval form, which have burrowed irregularly through the new bone and the subjacent shaft, nearly isolating some portions of it, and even passing through from one side to another. The parts thus ulcerated have, however, to a certain extent, healed; nearly all the bone bounding the ulcers is smooth, very hard, heavy, and solid; some of the portions which

remained between the ulcers, and under which they burrowed, appear, also, to have sunk in and united to deeper parts. *Hunterian.*

3115. Part of a skull, in which the outer surface of a portion of each frontal bone is, by syphilitic disease, very slightly elevated, and superficially tuberculated; the surface thus affected might be likened to that of a crowd of confluent vesicles, and is coloured with various shades of brown. In some situations, the little starred fissures and depressions between the more elevated parts of the diseased surface have become deeper and wider, as if by ulceration; and in others, the surface is penetrated by many small round and irregular ulcers, which appear to reach the diploe, and are bounded by indurated finely cancellous bone. Corresponding with this disease on its exterior, there is a brown spot, with traces of increased vascularity, on the inner surface of each frontal bone. *Hunterian.*

3116. The upper part of a skull, in which the outer surfaces of large portions of the frontal and parietal bones are superficially tuberculated, as in the preceding specimen, but are not changed in colour. All the tuberculated surface bears marks of increased vascularity, but the minute texture of the bone appears not altered. In several places the diseased surface is penetrated by irregularly shaped ulcers, larger and more numerous than those in the last-described specimen, but having the same general characters. The interior of the skull appears quite healthy. *Hunterian.*

3117. A skull, in which three oval spots, on the exterior of the frontal bone, are very superficially tuberculated and ulcerated. Some of the ulcers are minute and round, like enlarged vascular apertures; but, in two of the spots, the ulceration has formed a shallow groove, a line in width, which extends in a nearly complete circle just within the border of the diseased surface. There are traces of similar disease on each malar bone.

*Presented by Sir William Blizard.*

3118. A skull, in which the greater part of the os frontis is superficially tuberculated, like the last described. In many parts the diseased surface is

ulcerated; both perforated by small round or oval ulcers, and grooved with variously directed channels. In and above the nasal region the ulceration has made greater progress. The frontal sinuses have been laid open by a large ulcer, with uneven jagged margins, and in the adjacent parts the same kind of ulceration extends less deeply. The nasal bones, the greater part of the vomer, the palatine portions of the superior maxillary bones, with parts of their ascending processes, and the front of their alveolar border, have been completely removed by ulceration or necrosis; and the outer surface of the remaining parts of these bones is superficially tuberculated, like the least diseased part of the os frontis. Several portions of the parietal bones are similarly but very slightly diseased.

*Presented by Sir William Blizard.*

3119. A skull, exhibiting numerous patches of superficial syphilitic disease of the external table of the frontal and parietal bones.

3120. A skull, in which nearly the whole outer surface of the frontal and parietal bones has been the seat of the "tuberculated" form of syphilitic disease. Those parts which were not already ulcerated are tuberculated, like the preceding, but in many situations more deeply, and with wider and deeper stars and fissures between the elevated parts. The ulceration which has attacked the surface thus diseased (for probably the whole surface was thus, at first, tuberculated), presents three distinct forms: one marking the ordinary progress of the tuberculated syphilitic disease of the skull; another resembling the destructive penetrating ulceration shown in preceding specimens of syphilis of the long bones; and the third indicating that, in the course of this disease, the diseased surface of the skull became the seat of acute inflammation, with suppuration between it and the pericranium.

The first mode of ulceration, which is probably of slow progress, presents many of the characters shown in the preceding specimens. Its commencement may be observed about the margins of the diseased part, where, in many places, the centres and lines of the starred fissures between the elevations of the tuberculated surface are widened into round



or linear and branching apertures, many of which lead into larger ulcerated spaces in the diploe. In the central parts of the disease (especially about the middle of the frontal bone) similarly formed apertures are enlarged; but most of them retain traces of their origin in the numerous little tortuous and branching grooves which run on the surface of the bone around them, converging to their borders. Where these larger apertures exist, the diploe is more widely and irregularly ulcerated beneath them, so that there are cavities with overhanging margins; and these margins, superficially marked by the converging grooves already mentioned, are, for the most part, obliquely inclined towards the bases of the ulcers; and their edges are thin, and either smoothly rounded, or else finely but irregularly dentated or serrated. The bone composing the overhanging margins of the ulcers appears almost always hard and healthy; that which forms their bases is more brittle, as if formed by indurated cancellous tissue.

The second, and probably more rapid, form of syphilitic ulceration is shown at the upper part of the os frontis. Here, in the centre of a part which seems to have been much more vascular than the rest of the skull, numerous small ulcers appear to have coalesced, forming one quite irregular in shape, penetrating deeply, abruptly, and vertically through the outer table and diploe, and in a few small apertures through the inner table also, having all its boundaries uneven, sharp, and jagged, like broken diploe.

The third form of ulceration, ascribed above to acute inflammation supervening in the course of the syphilitic disease, extends over a great part of the outer surface of both parietal bones. It has removed a great portion of the diseased surface, leaving only small patches, like islands, bearing marks of their former tuberculated aspect, and exposing a nearly smooth surface of the deeper part of the outer table and of the diploe.

The first cervical vertebra is ankylosed, with slight lateral displacement, to the condyles of the occipital bone; and the second and third are similarly united to one another.

*From the Museum of Joshua Brookes, Esq.*

3121. A skull, in which the whole of the frontal portion of the frontal bone,



and the posterior parts of the two parietal bones, have their outer surfaces tuberculated and extensively destroyed by syphilitic ulcers, like those of the first two forms last described. In general, however, the ulcers in this are deeper than in the preceding specimens, and in several places they have penetrated, by large apertures, through the skull. The disease in this, as in many of the preceding specimens, exhibits a marked tendency to symmetrical progress. *Hunterian.*

3122. The upper part of a skull, the outer surface of which is in several distinct patches grey, superficially tuberculated, and irregularly ulcerated. The general character of the disease is like that in the chronic ulceration shown in the preceding specimens; but in several places the ulceration has extended yet more deeply than in the last, penetrating, by considerable apertures, through the whole thickness of the skull. At some of the largest of these apertures, as well as at some of the smaller ulcers, the smoothly rounded, shelving borders, formed by the adjacent consolidated and hardened bone, indicate that, after the ulceration, a process of healing had been established. In many parts the whole progress of the disease, commencing with the production of the superficially tuberculated surface, which afterwards became more deeply seamed and cracked, and was then more or less deeply and widely ulcerated, may be clearly traced. Exactly similar changes, but less in extent, have taken place on the interior of the skull, in spots which nearly correspond with those upon its exterior.

3123. The upper part of a skull, in which there are two ulcerated apertures in the left parietal bone, close by the sagittal suture. They are of irregularly oval form, about an inch in diameter, and their margins are abrupt and rough. In the same bone, near the coronal suture, there is a smaller ulcer, which, proceeding from without inwards, has penetrated the inner table by a few small apertures. There is another ulcer of the same kind as the last in the middle of the frontal bone, and a third has penetrated through the supra-orbital ridge into the orbit. There are also two ulcers of yet smaller size in the left parietal bone, near the squamous suture, and

in the right temporal fossa of the frontal bone. New bone has been formed on the inner table by the side of the groove for the longitudinal sinus. The rest of the skull is healthy. The nature of the ulcers is uncertain, but they most nearly resemble those shown in No. 3122.

3124. The upper part of a skull, in which there is a circular ulcerated aperture, two-thirds of an inch in diameter, in the middle of the left parietal bone. Its margins are oblique, but smooth; the tissue around it appears to have been unnaturally vascular. Just anterior to it there is a small circular healed ulcer in the external table. On the opposite parietal bone is a circular irregularly penetrating ulcer, a quarter of an inch in diameter, in the external table; and one of nearly the same size exists in the corresponding part of the internal table, but the two have only in two or three small points coalesced. There are signs of increased vascularity of the bone around this ulcer also, especially on the inner table, where the grooves for vessels are deep and numerous, and all radiate towards the margins of the ulcer. The general appearance of the disease is very similar to that of the preceding, but in neither does the bone appear tuberculated. *Hunterian.*

3125. A skull, in which a part of the external surface of the frontal bone is tuberculated. Half of it is slightly depressed, and its surface, though not level, is hard, and nearly smooth: it is, probably, a healed syphilitic ulcer. In the other half of the diseased surface is an ulceration, of unequal depth, having a hard but cracked and tuberculated surface, and smooth shelving margins, as if healing. There is a similar ulcer, healed, just above the right orbit. *Presented by Sir William Blizard.*

3126. The skull of a native of New South Wales, in which there is an oval partially healed syphilitic ulcer in the frontal bone, just above the left internal angular process. It is rather deep, and has a tuberculated base, with smooth shelving margins, marked by fine converging lines; its circumference, also, and the bone adjacent to it, are slightly tuberculated and increased in vascularity. There is a small oval pit, with a smooth

surface, near the spine of the occipital bone, the result, probably, of the complete healing of a similar but smaller ulcer. A few ulcers of yet smaller size exist on the parietal bones; and the outer table of parts of these bones, as well as of the frontal and occipital bones, presents numerous small round apertures, the orifices of enlarged vascular canals. There is a deep ulcer at each angle of the lower jaw; it was, probably, preceded by necrosis of a portion of the bone. *Presented by — Bell, Esq.*

3127. The upper part of a skull, in which a portion of the middle of the frontal bone was penetrated by numerous round, sharp, and broken-edged ulcers. Subsequently to this it probably perished, for it is nearly surrounded by a deeply ulcerated groove, by which it might soon have been separated as a sequestrum. The surface of the skull around the ulcer is irregularly depressed, as if it had healed after superficial ulceration; and there is a similar smooth depression at the posterior part of the left parietal bone.

*Hunterian.*

3128. The upper part of a skull, in which, on the right side of the frontal bone, near the coronal suture, there is a syphilitic ulcer, of the chronic tuberculated form, completely perforating both tables. It has the usual shelving borders formed of hard bone. On the left side a much larger portion of the frontal, and the anterior border of the parietal, bones have been removed either by rapid ulceration, or, more probably, by necrosis following ulceration, as shown in No. 3127. The borders of the aperture are abrupt, and the tissues of the skull which bound it are less altered than those which bound the other ulcerated aperture; but some of the outer surface adjacent to it is diffusely ulcerated and very vascular. The rest of the skull is healthy, and not tuberculated.

*Hunterian.*

3129. A skull, from which a portion of the upper and left wall, four inches in diameter, has been removed, probably after necrosis like that shown in No. 3128. The edges of the aperture are, for the most part, sharp and abrupt, and a little hollowed into the diploe: in one situation, the bone adjacent to the aperture is ulcerated, as if by acute inflammation, and at

the border of this it is superficially tuberculated. The vomer and the greater portion of the hard palate and alveolar border of the upper jaw have been removed, and the surface of the right malar bone is irregularly thickened and slightly tuberculated. There are other vascular and slightly tuberculated spots on the frontal and parietal bones. The coronal and sagittal sutures are obliterated.

3130. A skull, in which large portions of the frontal and parietal bones suffered necrosis during syphilis. The dead part of the frontal bone includes nearly the whole extent, and, in parts, the whole thickness, of its frontal portion, with the supra-orbital ridges, and the external angular processes on each side. It is black, nearly symmetrical in form, and separated by a deep groove from the adjacent living bone. There are several small ulcerated apertures through it; and at its central lower part is a small portion of bone which did not perish with it, but is smoothly ulcerated on its surface. The dead portion of the parietal bones is irregular in form, and superficially ulcerated; the process of separating it is less advanced than that in the frontal bone. The intermediate external table of the skull is uneven, and parts of it are very superficially ulcerated. There is a deep tuberculated ulcer on the orbital edge of each malar bone, accompanied on the left side by necrosis of small extent; and the centre of the palate is destroyed. The scalp of the patient is preserved in No. 2271.

*Presented by Sir P. M'Grigor.*

3131. The upper part of a skull, from which, in the course of tuberculated syphilitic disease, a large portion of the frontal and parietal bones suffered necrosis, and exfoliated. Part of the sequestrum, which includes the whole thickness of the skull, is preserved, and loosely fixed in its original place. Its outer surface is superficially ulcerated; its inner surface finely porous. Other portions, of considerable size, seem to have separated from the outer table only. The diploe exposed by their removal is hardened and nearly solid; beyond the extent of the necrosis it is in parts widely destroyed by ulceration burrowing between the tables, and opening through them by apertures, like those formed by the deepening and

widening of the star-like fissures in the tuberculated syphilitic skulls. The margin of the outer table bounding the space from which the bone exfoliated presents also the overhanging border and the thin edge, which are characteristic of the same disease. The rest of the skull is healthy, except that its diploe is consolidated.

*Presented by Sir William Blizard.*

3132. A skull, from which many large portions have been removed by ulceration or necrosis. The greater part of the frontal portion of the frontal bone, including the anterior wall of the frontal sinuses, large pieces of both parietal bones, of the squamous portions of the temporal bones, and of the occipital bone, have been thus removed. The disease has extended even to the foramen magnum, and a part of its border is ulcerated. The borders of many of the ulcers are smoothly rounded and healed, and at these parts the bone presents sufficient traces of the tuberculated form of syphilitic change to mark the original character of the disease. This is especially evident in the ulcer of the frontal bone and the wall of its sinuses. Other portions of the bone remaining between the apertures are superficially ulcerated; and in many parts the diploe is very widely destroyed.

3133. The upper part of a skull, in which, from syphilitic disease, nearly the whole outer table is superficially ulcerated. The ulceration presents the "annular" form. It appears to have commenced in distinct spots, and to have spread either in rings enclosing portions of healthy or ulcerated bone, or in circles; but in most places the ulcers thus formed have coalesced and become diffused, and have extended very irregularly in depth. In a few places small apertures have been made through the skull. The greater part of the posterior half of the right parietal bone has been removed, probably after necrosis.

*Hunterian.*

3134. The upper part of a skull, of which both tables were the seat of irregular and very extensive syphilitic ulceration. In a few parts it presents a tuberculated surface; in some it is made porous and finely grooved by



the enlargement of its vascular canals; in some the ulcers are superficial and isolated; in some diffuse; and in several places the skull is completely perforated. The diploe, also, is in some parts more extensively destroyed than either of the tables. The characters of the disease are confused; but it is probable that the ulceration had originally the annular form, such as is rather better shown in the preceding specimen, and much more distinctly in the skulls described in vol. ii., p. 116, Nos. 634, 635.

*Hunterian.*

3135. A femur, of which the lower three-fourths are enlarged, till, increasing from above downwards, its circumference measures about seven inches. The general aspect of the enlarged part closely resembles that of No. 3091 (described in this volume, p. 60, and in vol. ii., p. 101, No. 599), and is doubtless, like it, due both to the superficial formation of new bone, and to the expansion of the walls, followed by their consolidation and that of the cancellous tissue; for the enlarged part of the shaft is very heavy. Here also, as in No. 3091, there are syphilitic ulcers on the surface of the enlarged part: they are in this specimen very numerous, and have many of the characters shown in the two preceding skulls. A few of them have the annular form well marked; a deep ring-like groove, about a line in width, surrounding a small central portion of less ulcerated bone. A few others form small circles, as if the central pieces had been removed from the rings. Other ulcers, again, form larger circles, and in many parts two or more such have coalesced, forming an ulcer of irregular outline. The general depth of these ulcers is about a line, but their bases are uneven, and in many instances deep pits extend below the general base and burrow into the subjacent tissue. All the tissue exposed by the ulceration is like finely cancellous new bone hardened, but not consolidated. The intervening and not ulcerated parts of the surface of the femur are formed of hard smooth new bone, bearing marks of a moderate degree of vascularity.

3136. The upper part of a skull, in which there are a large irregularly ulcerated perforation in the course of the sagittal suture, and one of



smaller size near it in the right parietal bone. Around them there is extensive diffused and pitted or "perforating" ulceration of both the internal and external tables; and around the borders of this are many minute oval and circular ulcers, from a quarter of a line to a line in diameter (some looking like enlarged apertures for vessels), which penetrate, with sharp abrupt margins, straight into or through the table (whether internal or external) of the skull. These minute ulcers are, for the most part, very close-set, and in many places several of them have enlarged and coalesced. The character of the secondary or compound ulcers produced by their confluence is such as makes it highly probable that the whole of the extensive and diffused ulceration, as well as the large apertures in the skull, was also thus produced. All the rest of the skull, even the parts intervening between the most closely-set minute ulcers, appears of healthy texture. *Hunterian.*

3137. A skull, in which, in the course of syphilitic disease, two large circular portions of the middle of the frontal bone suffered necrosis, and are surrounded by a deep groove, separating them from the adjacent tissue. Previous to the necrosis both of them were the seats of numerous minute, circular, and oval sharp-edged and deeply penetrating ulcers, all close-set, and some confluent, just like those last described. As in the preceding specimen, also, all the tissue intervening between the ulcers is healthy. There are a few similar ulcers, in small groups, on the adjacent part of the frontal bone, and many more groups of them on both parietal bones, near the sagittal suture. The alveolar border of the upper jaw, as far as the sockets of the first bicuspid teeth on each side, has been completely destroyed by ulceration; and new bone is formed on the right angle of the lower jaw. *Presented by Sir William Blizard.*

3138. The bones of the upper part of a face. The nasal bones, the nasal processes of the superior maxillary bones, the lachrymal, a great part of the ethmoid, and all the turbinated bones have been removed by ulceration, which was probably of syphilitic origin. The surfaces of the cavity thus exposed are filled up and made smooth with new bone, and appear com-

pletely healed. There has also been a large superficial ulcer of the right side of the frontal bone, which has healed smoothly, but with depression of the surface. The middle and anterior part of the frontal bone exhibits several smooth irregular elevations.

*From the Museum of John Howship, Esq.*

3139. A skull, from which the middle and inferior turbinated bones, the palatine portions of the superior maxillary bones, and the whole of the septum nasi, except the posterior border of the vomer, have been removed; probably in consequence of syphilitic disease.

*Presented by Sir William Blizard.*

3140. Part of the base of a skull, in which nearly the whole of the hard palate and of the alveolar processes of the upper jaw, together with portions of the septum nasi, and of the nasal bones, have been destroyed by syphilitic ulceration.

*Hunterian.*

3141. A skull, of which the greater part of both parietal bones, and a portion of the occipital bone, have been destroyed by ulceration, which was considered to be syphilitic, but does not present the characters shown in any of the preceding specimens. A large portion of the left parietal bone has been wholly removed, and nearly all the rest of both the parietal bones is ulcerated and perforated by numerous apertures of various form and size. The bone exposed by the ulceration is hard and compact. A similar form of ulceration, in a less advanced stage, is presented in the upper half of the occipital bone. Around the borders of the greater ulceration are numerous minute, oval and circular, deeply penetrating ulcers. There is a mark of a healed fracture or ulcer just above the left orbit. The left middle turbinated bone is much enlarged.

*Presented by John Abernethy, Esq.*

7. *Necrosis.*7 a. *Necrosis of the Skull.*

3142. The upper part of a skull. A large portion of the outer table of the frontal bone appears to have suffered necrosis shortly before the death of the patient. It does not differ in texture from the rest of the bone, but is surrounded by a shallow ulcerated groove; and around the groove the apertures for vessels passing into the bone are unnaturally large.

3143. The upper part of a skull, in which a portion of the external surface of the left parietal bone was in process of exfoliation. The same appearances are presented as in the preceding specimen. A portion of the skull in the situation of the dead bone has been removed with a trepan.

*Hunterian.*

3144. A skull, from which nearly half the superior portion of the occipital bone, and a large piece of the posterior part of the right parietal bone, separated after necrosis. One large sequestrum is preserved. The remaining portion of the occipital bone, all the lower half of the right parietal bone, and the mastoid portion of the temporal bone, are superficially ulcerated on both their surfaces. In several situations the ulceration has spread through these bones, producing small perforations of the skull; and they are surrounded by an ulcerated groove, indicating that all the superficially ulcerated bone had perished. The posterior part of the right squamous suture is included in the ulcerated groove.

The history of this case is unknown, but a trephine has been applied near the posterior and superior angle of the right parietal bone, and near this situation the skull is, for a short distance, fissured. It is probable therefore that, after some injury, acute ulceration of both surfaces of the bone ensued, attended by suppuration between the bone and the pericranium and dura mater, the necessary consequence of which was necrosis of that part of the skull from which the membranes were separated.

*Presented by Sir William Blizard.*

3145. A skull, from which nearly the whole of the left parietal bone, with adjacent portions of the frontal and occipital bones, exfoliated, after a burn. During the fifteen years which the patient lived after the exfoliation, a small quantity of new bone appears to have been produced about the margins of the aperture left by the exfoliation. The dura mater is preserved, and isolated portions of the inner table of the skull, which did not exfoliate, are adherent to it; and there is a large oval aperture in it through which the brain protruded.

*From the Museum of John Taunton, Esq.*

3146. The portion exfoliated from the preceding skull. At its middle part it includes the whole thickness of the skull; in the rest of its extent only the outer table, with more or less of the diploe.

The patient, at the time of his death, was a convict, thirty-one years old. When about five or six years old, he had a fit during the cold stage of an ague, and fell with his head upon a fire, by which, before he could be removed, he was dreadfully burned. For the following ten years his mother used to apply simple dressings to his head, and he worked in a blacksmith's shop. When he was sixteen years old, as he was striking very violently with a heavy hammer, the sequestrum fell from his head: but the same simple treatment was pursued towards the surface thus exposed, and he continued his work, enjoying perfectly good health, though the granulating surface left after the exfoliation did not heal. He was sent to the hulks at Portsea when he was thirty years old, and the surgeon, John Porter, Esq., collected from him the preceding history. After he had been there about eight months, during which he had worked hard, and had been quite healthy, he had severe catarrh, with headache affecting especially the injured side, fever, and delirium. From these he recovered; but, about four months afterwards, having been in the mean time nearly well, he was seized with very acute pain in the head, a large tumour appeared beneath the sore, and he became paralytic on the right side. Ultimately the tumour burst, and he died, after a considerable quantity of cerebral substance had been discharged.

*From the Museum of John Taunton, Esq.*

3147. The upper part of a skull, from which, apparently in consequence of violent injury, a portion, including the whole thickness of the superior and posterior angles of the parietal bones, and of the superior angle of the occipital bone, suffered necrosis and exfoliated. The greater part of the sequestrum, in which there are two large trepan-holes, is preserved. The

patient must have lived for a considerable time after the exfoliation took place, for the sequestrum is larger than that part of the aperture in the skull from which it was removed. The diminution of the aperture is the result of the growth of new bone from the borders of the inner table. By fitting the sequestrum to the aperture, it may be seen that in many situations a layer of new bone, more than half an inch wide, has been thus produced: a smaller quantity has grown from the outer table and the diploe.

3148. The upper part of a skull, in which there are two apertures of irregular form, each about three-quarters of an inch wide, in the left parietal bone, near its anterior and inferior angle. Around the apertures the external table of the bone has been, to some extent, removed; but the remaining surface, and the margins of the apertures, are smoothly cicatrized. On the right parietal bone there has been a similar superficial loss of substance, but here also the remaining surface has healed. It is probable that these changes were consequent on necrosis of the skull.

3149. The posterior part of a skull, from which a large portion of the parietal and occipital bones was separated, probably in consequence of necrosis. A portion of the right parietal bone, nearly two inches wide, and including its whole thickness, has been separated, and, for a considerable distance around the aperture, the outer table and the diploe have been removed to various depths. The whole of the exposed surface is healed, and the edges of the aperture through the bone are smoothly rounded off.

*Hunterian.*

3150. The upper part of a skull, from which a portion of the left parietal bone was removed, probably after necrosis. The margins of the aperture are smoothly rounded off.

*Hunterian.*

3151. The upper part of a skull, from which a portion of the whole thickness of the right half of the frontal bone was removed, after fracture or necrosis. The margins of the aperture, which is of an oval shape, and nearly two

inches in its greatest diameter, are smoothly rounded, shelving obliquely from without inwards. Some new bone appears to have been produced at the edges of the aperture in the inner table, by which its size is rendered considerably less internally than it is externally. The remaining aperture is closed by a tough membrane. *Hunterian.*

3152. Part of the skull of an ass, from which a portion has been removed, by exfoliation or trepanning, from the junction of the parietal and frontal bones. The aperture is in part filled up by the growth of bone from the margin of the inner table, and new bone is deposited around it on the external surface. *Hunterian.*

3153. Various sequestra from skulls. In some the outer surface, or the greater part of it, is smooth and polished, the superficial laminae of the bone being unaltered. In these the necrosis was probably the direct result of violence. In some the tables are generally, but superficially and uniformly, ulcerated, and in these the necrosis may be presumed to have succeeded to disease consequent on injury, such as diffuse suppuration beneath the pericranium, and between the bone and dura mater. In others the outer table is irregularly, and in many parts very deeply, ulcerated; in some of these the diploe is destroyed, probably from suppuration through its texture: in some the tables are perforated by numerous small circular ulcers. Most of these have the characters of sequestra, separated after injury and consequent inflammation of the adjacent parts.

*Hunterian.*

#### 7 B. *Necrosis of the Lower Jaw.*

3154. A large portion of the symphysis and of the left side of the lower jaw of an adult, which exfoliated after necrosis. There are small portions of new bone on parts of its surface. *Hunterian.*

- 3154A. A similar smaller sequestrum.



7c. *Necrosis of the Sternum.*

3155. A sternum, in which there has been necrosis of several small portions of the cancellous tissue. The cavities in which the sequestra were contained, and in which portions of them, imperfectly detached, still remain, open by circular and oval orifices on both surfaces of the bone. New bone has also been formed in a thin layer on the greater part of both the surfaces.

*Presented by Sir William Blizard.*

7d. *Necrosis of the Bones of the upper extremity.*

3156. A scapula, in which, after a gun-shot wound, necrosis of a portion of the inferior border ensued. The necrosed portion lies at the bottom of a shallow cavity in the border, but is only partially separated. The adjacent part of the border is thickened, and above it is an opening through the bone with sharp smooth edges.

*Hunterian.*

3157. An humerus, in the upper part of which there has been necrosis of a portion of the walls and cancellous tissue. There is a cavity in the interior of the shaft just below the tuberosities, with four large openings into it. The margins of these openings are smoothly rounded, and but little new bone is deposited around them. The rest of the shaft is healthy.

*From the Museum of Robert Liston, Esq.*

3158. The lower part of the shaft of an humerus, from which a portion of the cancellous tissue and walls exfoliated after necrosis. The cavity which contained the sequestrum remains wide open. The whole of the rest of the shaft is altered in shape by superficial formations of new bone.

*Hunterian.*

3159. "An internal exfoliation from Mr. Mothland's Os Humeri, 1775."

*Hunterian MS. Catalogue.*

3160. The humerus of a swan, from which a thin portion of the exterior of the walls has exfoliated. The sequestrum is nearly four inches long, and its centre is perforated by a small shot, which is loose in the interior of the bone. A small quantity of new bone has been formed on each side of the part from which the sequestrum was removed, and a larger quantity at each end of it.

*Hunterian.*

3161. A radius, of which nearly the whole of the middle third, and a small portion at the tuberosity, suffered necrosis. Portions only of the superficial lamellæ are connected with the sequestrum, the greater part of its surface is roughly ulcerated. A thin layer is deposited on nearly all the portions of the shaft which did not perish.

3162. The bones of a fore arm, with part of the humerus. Large portions of the shafts of both the radius and ulna have separated after necrosis. New bone has been abundantly produced around the sequestra, locking in some portions of them, and firmly uniting the remaining parts of the shafts. There is osseous ankylosis of the elbow-joint; and a large opening in the inferior articular surface of the radius communicates with one of the cavities containing dead bone.

*Hunterian.*

3163. A thick irregular case of new bone, formed around a sequestrum which comprises the greater part of the shaft of an ulna. The new bone formed upon the articular portions of the ulna, which did not perish, and that formed around the sequestrum, have coalesced into one cylinder, which is complete with the exception of several round and irregular apertures in its posterior part. In both the articular surfaces of the ulna there are apertures communicating with cavities containing sequestra.

*Hunterian.*

3164. The bones of an elbow-joint. A large portion of the upper and posterior

parts of the ulna, immediately below the olecranon and the coronoid process, has separated after necrosis. In its place there is a cavity of corresponding size, widely open posteriorly, and having large round orifices of communication with the elbow-joint above and in front. Its walls are formed of the remains of the original shaft, thickened, and covered with new bone. There is complete osseous ankylosis of the humerus to the radius, and the remains of the ulna; and of a part of the shaft of the ulna to the corresponding part of the radius. The radius is irregularly enlarged in the upper part of its shaft.

*Presented by Sir William Blizard.*

3165. A large sequestrum from an ulna.

*Hunterian.*

#### 7 E. *Necrosis of the Femur.*

3166. The upper part of a femur, exhibiting necrosis of two or more portions of the cancellous tissue of the great trochanter. The dead bone is not completely separated, and lies at the bottom of a cavity in the trochanter and neck of the femur, which opens externally through two large round apertures. New bone has been formed about the trochanter.

From an old man, in whom the disease had long existed.

*From the Museum of Robert Liston, Esq.*

3167. The upper half of the femur of a young person, with an abundant deposit of new bone on the upper and inner part of the shaft about the lesser trochanter. Two large oval apertures lead into a cavity beneath the new bone. The changes were probably consequent on necrosis.

*Presented by Sir William Blizard.*

3168. The lower end of a femur, of which a large portion, just above the condyles, suffered necrosis. The sequestrum, which is nearly six inches long, is enclosed in a cavity formed by the remains of the walls covered with new bone, which cavity is widely open behind and below, and

perforated by several small round apertures in front and at the sides. The epiphysis, which had not yet united with the shaft, is healthy, but is drawn backwards, and the anterior wall of the femur projects a little over it.

*Presented by Sir William Blizard.*

3169. The lower end of a femur, in which there has been necrosis of a small portion of the walls and cancellous tissue just above the condyles. In the middle of the shaft is a cavity, from which the sequestrum has been removed. It opens widely in front, and by two small apertures on the side of the inner condyle; its walls are formed of indurated cancellous tissue. The shaft around and above the cavity is thick and heavy; new bone has been formed on its surface, and the cancellous tissue is nearly consolidated. The articular surfaces of the condyles are ulcerated, and the patella is ankylosed to the outer condyle.

*Presented by Sir William Blizard.*

3170. Vertical sections of the lower end of a femur, in which there has been necrosis of a small portion of the cancellous tissue. In the middle of the shaft is a cavity, from which a wide canal leads obliquely downwards and forwards through the walls. The cavity is bounded by cancellous tissue, somewhat condensed, and a few small portions of dead bone are adherent to its interior. The shaft around the cavity is enlarged by thickening, with increased density of its walls, and plates of new bone are deposited upon its exterior.

*Hunterian.*

3171. The lower end of a femur, in which it is probable that there has been necrosis of a portion of the cancellous tissue. At the lower part of the shaft is a large cavity, which probably contained a portion of dead bone. This cavity opens widely through the posterior wall, and by a narrow aperture through the anterior wall; and, below, it appears to have opened through a long passage into the knee-joint. The whole shaft is very much enlarged. At the transverse section, about eight inches above the condyles, the medullary tube is only a quarter of an inch in diameter, but the wall is, at the posterior part, nearly an inch thick. The whole

substance of the walls is composed of a porous heavy tissue; its exterior is in some parts smooth, but in others is roughly covered with new bone. There has been ulceration of portions of the articular surfaces, and of the posterior part of the condyles. *Hunterian.*

3172. A portion of a femur, about two inches long, and, including the whole thickness of the shaft, separated after necrosis consequent on a compound fracture. It is in several places irregularly fissured.

*Presented by Sir William Blizard.*

7 F. *Necrosis of the Tibia.*

3173. Part of a tibia, on the posterior surface of which two portions of the walls have perished. They are distinguished by their smooth clean surfaces, and are surrounded by shallow grooves. The adjacent bone is more porous than is natural, and some new bone is formed on it. *Hunterian.*

3174. Part of a tibia, from which a large piece of the anterior wall, just below the tuberosity, has separated after necrosis. The adjacent part of the shaft is thickly covered with new bone, some of which has extended over the margins of the sequestrum, and retains it in its place. There are several ulcerated apertures in the articular surface of the tibia and around its epiphyses. *Hunterian.*

3175. The shaft of a tibia, in which necrosis has affected several isolated portions of the surface of the walls near its upper end. The adjacent parts of the bone are rough, partly as if from superficial ulceration, partly from the deposits of new bone. *Hunterian.*

3176. Part of a tibia, with a large sequestrum separated from its anterior wall. Several small holes have been bored into the sequestrum, probably for the purpose of applying some substance supposed likely to accelerate its

separation. The surrounding parts of the shaft are covered with abundant deposits of new bone.

3177. A tibia, of which a portion near the ankle-joint, about three inches long, and comprising a great part of the thickness of the shaft, suffered necrosis. A large quantity of light and friable new bone has been formed very irregularly around it. The upper part of the shaft is superficially ulcerated, and has thin layers of new bone upon it. *Hunterian.*

3178. A tibia, of which a portion of the walls, with some of the cancellous tissue, near the ankle-joint, has separated after necrosis. A great quantity of new bone has been formed on the adjacent part of the shaft. The cavity containing the sequestrum is very large, and opens widely through the lower articular surface of the tibia. The rest of the shaft bears marks of unnatural vascularity. *Hunterian.*

3179. Part of a tibia, at the lower end of which there are numerous oval and round apertures in the walls, and fistulous canals and cavities in the interior. Several of these cavities open upon the articular surface, the intervening parts of which are superficially ulcerated. In one of the cavities there is a small loose sequestrum of compact tissue. The adjacent part of the shaft is in some situations enlarged, in others superficially ulcerated. *Hunterian.*

3180. Part of a tibia, from which a portion of the anterior wall separated after necrosis. It lies loose in a cavity, the anterior part of which is formed of new bone, and is perforated by several round apertures. The adjacent part of the shaft is enlarged by superficial deposits of new bone. *Hunterian.*

3181. A tibia, of which a portion, upwards of five inches long, and comprising nearly the whole thickness of the shaft, separated after necrosis. New bone has been formed on the shaft above and below the sequestrum, and a large quantity has been formed on the outer and posterior part, where



the sequestrum does not comprise the whole thickness of the wall. A narrow strip of new bone, opposite the spine of the tibia, is all that connects the portions of the shaft above and below the sequestrum.

*Hunterian.*

3182. A tibia, of which nearly the whole length, and in many parts the whole thickness, of the shaft suffered necrosis. The separation of the dead bone is not complete; it adheres by its extremities to the epiphysis and the portions of the living shaft near them. New bone has been produced abundantly upon those parts of the surface of the shaft which did not perish, but the walls thus formed are very imperfect, and at both the upper and lower parts wide spaces intervene between the new walls and the epiphyses.

*Hunterian.*

3183. A tibia, of which a large portion of the shaft, including more than half its anterior wall, suffered necrosis. The dead portion is completely separated, but is retained within an imperfect cavity formed by the remaining portions of the shaft, and by the new bone deposited upon them, some of which has grown so as to project over the margins of the sequestrum. No new bone has been formed opposite that part of the sequestrum which comprises the superficial layers of the original shaft.

*Hunterian.*

3184. A tibia, of which the whole of the shaft suffered necrosis, with the exception of the superficial layers of its outer and posterior walls, and a small part of those of its anterior wall. The separation of the dead portion is complete. New bone has been abundantly formed behind it, and on its outer side; but none in front of it, except at its upper part, where a small quantity projects over it from the sides. A thin layer of new bone had been formed on the shaft previous to its necrosis, and perished with it.

*Hunterian.*

3185. A child's tibia, of which the whole length of the shaft, except a small portion of its upper end, and its whole thickness, with the exception of its

spine and portions of the edges of its lower part, suffered necrosis. The separation of the dead portion is complete. New bone has been formed on the upper living part of the shaft, and around the lower end of the sequestrum. In the latter situation it is formed at only those parts beneath which the sequestrum does not comprise the superficial layers of the shaft. *Hunterian.*

3186. A tibia, in which there has been necrosis of a portion of the anterior wall and cancellous tissue nearly twelve inches long. The separation of the sequestrum is complete, and it lies loose in a cavity, which is open along the whole front of the tibia, and of which the walls appear to be chiefly formed of new bone. *Presented by Sir William Blizard.*

3187. The tibia of a child, on the exterior of which, after necrosis of several small portions of the interior of its shaft, new bone has been abundantly produced. *Hunterian.*

3188. The upper part of a tibia, in which, with extensive ulceration of the walls, and necrosis of several small portions of the deeper tissue, the epiphysis has separated from the shaft. The remains of the articular surface also are deeply ulcerated. *Hunterian.*

3189. A vertical section of a tibia, in which there has been necrosis of numerous small portions of the walls of the middle and upper part of its shaft. The removal of these has left several irregular cavities in the interior, and apertures of various size and form in the adjacent walls, of the tibia. The walls are thickened, both by the superaddition of bone and by their own expansion: their thickness and compactness are very different in different parts. There is a similar irregularity in the character of the cancellous tissue; in some parts its lamellæ are thick and very close set; in other parts the medullary tube is chiefly filled with fatty substance. *Hunterian.*

3190. The lower third of a tibia, in which there has been necrosis of a portion of the cancellous tissue near the ankle-joint. The sequestrum is com-

pletely separated, and lies loose in a cavity which opens by a large orifice through the anterior wall, and by smaller openings through the lateral walls, and, through the articular surface, into the ankle-joint. The shaft around and above the sequestrum is enlarged and covered with new bone, and the medullary tube is nearly obliterated.

*Presented by Sir William Blizard.*

3191. Part of a tibia, in which there has been necrosis of a small portion of the walls and cancellous tissue near its upper end. The sequestrum lies loose in a cavity in the interior of the bone, from which several apertures lead through the adjacent parts of the walls. Nearly all the rest of the shaft is enlarged and increased in density, and new bone is deposited on its surface. At the lower and front part of the shaft a circumscribed portion of this new bone has the characters of that which is usually formed under deep ulcers of the integuments of the leg. *Hunterian.*

3192. Part of a tibia, "which had been often ulcerated, and, by being laid bare for some extent, the exposed surface became dead, and the process of separating was just beginning." *Hunterian MS. Catalogue.*

3193. A nearly similar specimen: a tibia, from the anterior surface of which an oval portion was in process of exfoliation. The sequestrum is encompassed by a broad and deep groove; its surface is uneven and porous, like the surface of bones just beneath ulcers of the integuments; and its border is black, from the application of the actual cautery. The surrounding bone is indurated, and new bone has been formed on its surface. The whole shaft is increased in weight. There had long been a deep ulcer of the integuments over the diseased part of the tibia. When the surface of the bone was exposed, the actual cautery was applied to accelerate its exfoliation. *Hunterian.*

3194. A similar specimen; but the sequestrum of new bone is nearly separated, and the cautery had not been applied.

*Presented by Sir William Blizard.*

3195. A tibia, on the surface of which there are several thin layers of new bone. On the anterior surface a part of the new bone is surrounded by a shallow ulcerated groove, having probably suffered necrosis.

*Hunterian.*

3196. A tibia, of which nearly all the lower part of the shaft is enlarged and made uneven by the formation of new bone upon its surface. A portion of the anterior wall, about four inches in length, and one inch in width, together with the new bone on it, suffered necrosis, and is almost completely separated from the adjacent part of the shaft. The shaft is fractured at the part from which the dead bone was being separated, but it is uncertain whether the fracture occurred before or after death.

*Presented by Sir William Blizard.*

3197. A tibia, on the inner surface of which there is a superficial oval ulcer, such as may have been left after the separation of sequestra like those shown in the preceding specimens. The adjacent part of the shaft is covered with a thin irregular layer of new bone.

*Hunterian.*

3198. Part of a tibia, from the anterior surface of which a portion of the wall exfoliated, probably after such disease, produced by long-continued deep ulceration of the integuments over it, as is shown in the preceding specimens. Partial healing appears to have taken place. The surrounding part of the shaft is enlarged by thickening of its walls and formation of new bone upon them. The part of this new bone, which is on the front of the tibia, is light and finely porous.

3199. The remains of a tibia, from which large portions of the anterior wall and cancellous tissue have been removed; it is uncertain whether by operation or by processes of disease.

*Hunterian.*

3200. The remains of a tibia, after removal of sequestra from its anterior wall and cancellous tissue. The surface of the shaft is superficially ulcerated.

*Hunterian.*

3201. A sequestrum from the front of a tibia. The actual cautery and trepan had been employed to accelerate its separation. *Hunterian.*
3202. Two large portions of a tibia, exfoliated after a compound fracture followed by necrosis. *Hunterian.*
3203. A sequestrum, about six inches long, and, through two inches of its length, comprising the whole thickness of the shaft of a tibia. It is marked "Exfoliation from the tibia of a girl eight years of age, which was supplied with new bone, and now is well and walks." *Hunterian.*
3204. A sequestrum, from a necrosed tibia. It is about five inches in length, and includes in many parts the whole thickness of the shaft.  
*Presented by Sir William Blizard.*
3205. An oval sequestrum, from the front of a tibia. Its outer surface is irregular, from superficial ulceration and deposit of new bone. Its exfoliation was probably consequent on its being exposed by ulceration of the soft parts over it. *Hunterian.*

*7 G. Necrosis of the Fibula.*

3206. The lower part of a fibula, from which the whole of the malleolus was in process of exfoliation after necrosis. *Hunterian.*
3207. Part of a fibula. About the middle of the shaft, a narrow groove passes irregularly around the wall, indicating that the bone below it had suffered necrosis. The other boundary of the dead portion is not obvious, but around the external malleolus there are several perforations as if produced by ulceration of the walls. Above the groove is a thin layer of new bone. *Hunterian.*
3208. The lower part of a fibula, a large portion of which has suffered necrosis,

apparently after fracture. The dead bone is separated, but is held in its place by new bone formed around it. *Hunterian.*

3209. A similar specimen, except that the separation of the sequestrum is not complete. *Hunterian.*

3210. The upper extremity of a fibula, from the interior of which exfoliations have taken place. The cavity which contained the sequestra is large; its walls are chiefly formed of new bone, and there are several apertures in them. *Hunterian.*

7 H. *Necrosis of the Bones of the Foot.*

3211. An os calcis, the whole surface of which, except at the parts where it articulated with the astragalus and os cuboides, is rendered exceedingly irregular by ulceration, and the heaping up of large quantities of new bone. The changes appear to have been consequent on necrosis of many isolated portions of its tissue, of which some probably have been separated, and others remain incompletely detached. The anterior articular surface is healthy; of the superior, much is destroyed by ulceration. *Hunterian.*

3212. An os calcis, in the posterior part of which there is a deep ulcerated cavity, from which probably a sequestrum of cancellous tissue was discharged. The adjacent part of the bone is enlarged, and thickly covered with new bone. The superior articular surface is superficially ulcerated.

3213. A metatarsal bone, from some quadruped, enlarged in consequence either of necrosis, or of the collection of pus, or some other substance, in its whole interior. Its walls are very thin, and are perforated by numberless minute rounded apertures, and by a few of larger size; their outer surface is in many places rough, through the deposition of new bone; the inner surface is nearly smooth. *Hunterian.*



8. *Tumours of Bone.\**8 A. *Cartilaginous and Osseous Tumours.*

3214. A tibia, upon which it was supposed that, in consequence of the lodgment of a bullet, an enormous quantity of new bone was formed about the upper and posterior part of the shaft. The general appearance of the specimen, the form and structure of the newly-formed bone, the eversion of the walls of the shaft adjacent to the mass which the new bone forms, and their being in some degree expanded so as to cover a part of its surface, leave little doubt that there was a large cartilaginous and osseous tumour growing on the upper part of the tibia.

*Presented by Sir Ludford Harvey.*

3215. The upper half of a skull, with a small osseous tumour on the right side of the frontal bone, close by the coronal suture, in the line of the temporal ridge. The base of the tumour is narrower than its body, which is flattened and directed backwards. It is covered with compact bone, whose surface is continuous with and similar to that of the external table of the skull.

*Hunterian.*

3216. Section of a large ivory-like bony tumour, which grew from the forehead of an ox, and appeared to have its origin in the frontal sinuses. Its form appears to have been nearly spheroidal: it weighed upwards of sixteen pounds, and measures eight inches and a half in its greatest diameter. Its outer surface is very irregular; formed in large low knobs and projecting ridges, but everywhere hard and smooth, like the exterior of an elephant's tusk. The surface of its section shows that in its interior it was nearly all as solid, hard, close-textured, and heavy as ivory. There are, however, some small cavities in it, of irregular form and size: the walls of one of these are quite smooth; those of the others rough, as if

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\* Arranged in correspondence with Sub-series 6, in Series XII., vol. ii., p. 164.

broken. There are also many minute apertures, like the orifices of the canals for blood-vessels in bone, and many of these have a general arrangement in lines or groups which radiate from the centre towards one-half of the circumference. At one part of the circumference, also, there is an appearance of a separate layer, about a line in thickness, surrounding the rest of the mass, like the layer of bone investing the ivory of a tusk. But the whole of this tumour has the microscopic structure of bone; it is therefore of the same kind as that described in vol. ii., p. 172, No. 795, and the others arranged near it.

*Presented by Sir Joseph Banks.*

3217. Part of a tibia, with a small round flat osseous tumour on the middle of its anterior surface. *Hunterian.*

3218. Sections of part of a tibia, of which a great portion of the circumference of the shaft is surrounded by a broad flattened osseous tumour. The tumour and the walls of the bone are everywhere firmly united, but the line of boundary between them is still evident.

*From the Museum of Sir A. P. Cooper.*

3219. A tibia, with a large osseous growth of very irregular form on the anterior and outer part of its shaft. Its base of attachment extends from below the tubercle of the tibia for about six inches downwards, and around all the outer and posterior part of the shaft in the same extent. Its surface is nodulated, and in parts black, as if from the application of the actual cautery.

*From the Museum of John Taunton, Esq.*

3220. A tibia and fibula, with a large osseous tumour. The tumour has grown almost entirely from the anterior and lateral parts of the upper two thirds of the tibia. It is of an irregularly oval form, and measures ten inches from above downwards, about fourteen inches from side to side, and exactly a yard in its chief circumference. Its surface is for the most part smooth, evenly rounded, and covered with a very thin layer of compact osseous tissue. Its interior and a few parts of its surface are

formed of coarse cancellous tissue, about as heavy as that of healthy bone, and containing abundant medulla. Its exterior is smoothly continuous with that of the tibia, the walls of which are expanded and everted around its base of attachment. The fibula is pushed outwards, and so compressed by the growth of the tumour, that it is in some parts nearly two inches in width, and only two lines in thickness.

The limb was amputated at St. Bartholomew's Hospital by Mr. Gay, and weighed, with the foot, &c., forty-two pounds. The preparation is engraved (of half the real size) in Cheselden's 'Osteographia,' Tab. 53, figs. 1, 2, 3; and there is a large painting of it in the Museum of Saint Bartholomew's.

*Presented by William Long, Esq.*

8 B. *Out-Growths and Enlargements of Bone resembling Osseous Tumours.*

3221. A femur, on the middle and anterior part of which there is a flat broad-based growth of healthy bone. One edge of it is sharp, and overhangs the adjacent portion of the shaft: the other is smoothly continuous with the surface of the shaft.

*Presented by Sir William Blizard.*

3222. Sections of a femur, with a similar osseous out-growth on the middle of the internal surface of its shaft.

*Hunterian.*

3223. A femur, with a similar but larger osseous growth upon the middle of its anterior surface. The tumour is flattened, and has a long base of attachment, from which, however, it extends far downwards and inwards, overhanging the adjacent portion of the shaft. Its surface is smooth, and covered with compact osseous tissue at every part, except at its lower projecting end, where cancellous tissue is exposed. The surface of its base is continuous with that of the wall of the femur.

*Hunterian.*

3224. A femur, with a small osseous out-growth upon its inner margin, just above the internal condyle. The growth is somewhat flattened, has a

broad base, is directed upwards, and is composed of cancellous tissue partially covered with compact tissue. *Hunterian.*

3225. Part of a femur, with an osseous growth upon its outer and posterior margin, just above the external condyle. The growth has the same characters as that last described, but is much larger. *Hunterian.*

3225A. A femur, with a portion of the ischium, to which it is united by an arched growth of bone, four inches long, an inch and a quarter wide, and half an inch thick, extending from the lesser trochanter to the tuber ischii. *Hunterian.\**

3226. The right femur of a young person, on which a small sharp-edged ridge projects in front of the lesser trochanter. It is formed of cancellous tissue, thinly covered with compact bone. The whole of the shaft is very light and thin-walled. *Hunterian.*

3227. The left femur of the same person, on which a similar slight ridge or elevation of cancellous bone, continuous with that of the medullary tube, is raised on the anterior and outer margin, just above the external condyle. *Hunterian.*

3228. The left tibia of the same person, on which there are several small pointed broad-based out-growths of cancellous bone thinly covered with compact tissue, near its upper end, and two of the same kind near its lower end. Of the latter, one seated on the posterior margin of the shaft forms a thin cylindriform process half an inch long. *Hunterian.*

3229. The right tibia of the same person, on which there are similar growths, like small sharp ridges of bone, on the outer and posterior margin of the shaft. Not one of the growths on any of these bones is in the situation

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\* Some of the bone formed in the remarkable specimen No. 3367, in which, with extensive formation of bone in the muscles and other parts, nearly all the joints are anchylosed, appears to have been produced in the same manner as these out-growths.

of the attachment of a tendon. They are all, like that first described, very light and thin-walled. *Hunterian.*

3230. An humerus, of light texture, and presenting at its upper part several small ridges and projections, like those on the preceding bones. It is probably from the same patient. *Hunterian.*

3231. A vertical section of the upper part of a femur, of which the neck is enlarged, especially at its lower and outer part. The enlargement is owing to an increase of the healthy cancellous tissue: the structure both of it and of the wall is light, weak, and greasy, but is in other respects unaltered. The external surface of the enlarged part is irregularly elevated, in knobs and ridges, formed by out-growths of the cancellous tissue, thinly covered with compact bone, just like those in the preceding four specimens.

*From the Museum of John Howship, Esq.*

3232. A vertical section of an humerus, most probably from the same person as the preceding specimen, exhibiting, in a less degree, the enlargement of small portions of its shaft by increase of healthy cancellous tissue, the lightness and thinness of its walls, and the growth of a slender process of bone from the surface of one of the enlarged parts.

*From the same Museum.*

3233. The tibia of a fowl enlarged, and having numerous irregular sharp-pointed growths of bone on its margins.

3234. Portions of the upper part of the skull of a maniac. The tables of parts of the occipital, parietal, and right temporal and frontal bones are widely separated by the formation of bone in the diploe. The separation is effected entirely by the elevation of the outer table, the form of the inner table being unaltered, and has formed a large smoothly-rounded tumour upon the back and right side of the skull. The tumour is most prominent in the situation of the lambdoidal suture, where the external table is raised more

than an inch and a half, and is extremely thin. The bone here formed between the tables is hard and heavy, but delicately porous and spiculated ; it appears to have been formed in several distinct masses, most of which have coalesced, and of which the remaining surfaces are covered with fine spicula. They are closely connected with both the external and internal tables, and all the adjacent sutures are obliterated. In the right temporal and frontal bones the tumour is less prominent, but the bone here formed is solid, compact, and heavy.

*From the Museum of John Heaviside, Esq.*

3235. A skull, exhibiting similar elevations of the parietal and occipital bones. The principal elevation is on the left parietal bone, where also the external table is very thin, and in parts absorbed, so as to expose the structure of the finely porous new bone formed in the diploe. The structure of another portion of the new bone, exposed by a section of the occipital bone, is like that in the preceding specimen, but much more finely cancellous or porous; and it has more generally coalesced with the outer and inner tables. Similar disease has affected, to a small extent, the external angular processes and adjacent parts of the frontal bone; and there are very slight traces of its effects on the interior of the left parietal bone.

*Purchased, 1847.*

3236. Part of a skull, with elevations of the middle portions of the parietal bones, and of the upper part of the occipital bone, similar to those in the preceding specimens, but in a much less degree. The bone formed between and separating the tables of the skull is, in this case, more like natural diploe than that shown in the preceding, and herein the case resembles those illustrated in No. 2838, and other instances of simple hypertrophy of the skull. But it differs from all those, in that there is no depression of the inner table towards the cavity of the skull, as if in compensation for the diminished volume of an atrophied brain.

*Presented by Sir William Blizard.*

- 3236A. The bones of a face, with bony tumours. The tumours consist of two



large masses of almost exactly symmetrical form and arrangement, which have partially coalesced in the median line. They are of an irregularly rounded form, deeply lobed, and somewhat nodulated: they are nearly as hard and heavy as ivory, and their surfaces are perforated by numerous apertures, apparently for the transmission of blood-vessels. Their interior, as far as it is exposed, consists of a very close cancellous tissue, bearing a general resemblance to that of true bone. They project more than three inches in front of the face, and an inch on each side, beyond the malar bones; they completely fill both orbits, the cavities of the nose, and probably both the antra, and they extend backwards as far as the pterygoid plates of the sphenoid bone. There is scarcely any vestige of the form of the face, except in the deep groove which separates the two chief masses of the tumours, and at the bottom of which a part of the septum of the nose is seen, and in the alveolar arch of the upper jaw, which remains perfect, with several teeth imbedded in it. It is probable that the disease producing these growths began in the superior maxillary bones, and thence extended to the other bones of the face, and, in a slight degree, to the left external angular process of the frontal bone.

The patient, a man sixty years of age, believed that the disease commenced eighteen years before his death, in consequence of repeated blows received on the face in fighting. He suffered, during the growth of the bones, much pain in the face, eyes, and head. His eyes projected from the orbits; the right eye, after suppuration and sloughing of the cornea, shrivelled; the left was accidentally burst by a blow while it was projecting and turgid with inflammation. During the last two years of his life he occasionally showed symptoms of insanity. At last he died suddenly with apoplexy.

All the cranial bones were thick and hard, and all their sutures were obliterated. Blood was effused beneath the cerebral arachnoid. The integuments of the face were greatly attenuated; the periosteal covering of the growths was dense and vascular.

*From the Museum of George Langstaff, Esq.*

- 3236B. Portions of a skull, exhibiting, on corresponding parts of the parietal bones, growths of new bone, like those formed in cases of inflammation of the periosteum of the long bones. Both the growths are, alike, of nearly oval form, slightly convex, elevated gradually to a height of about two lines above the proper level of the surface of the bone, with which they have completely coalesced. They are situated almost exactly over the

original centres of ossification of the parietal bones. The grooves, and other spaces intervening between the ridges and lamellæ that compose them, contained blood-vessels. On the frontal bone, especially about its eminences, there are numerous minute orifices, and some shallow grooves for blood-vessels, indicating an unnatural amount of vascularity. Similar changes exist on the inferior surface of the orbital plate of the frontal bone.

The skull was taken from a youth nineteen years old.

*Presented by Joseph Toyne, Esq.*

### 8 c. *Osteoid Tumours.*

3237. A macerated and dried section of the osteoid tumour of the femur which is described in vol. ii., p. 176, No. 806. *Hunterian.*

3238. The ribs, with the dorsal and some of the lumbar vertebræ, of the patient from whom the femur last described, and other parts described in vol. i., p. 103, and vol. ii., p. 178, were removed. Broad and thick irregularly nodulated plates of bone are attached to the inner surfaces of several of the ribs on both sides, near the vertebral column. On each side the plate of bone is about six inches in width, and in parts nearly two inches in depth. A similar but smaller plate of bone is fixed on the front of the eleventh dorsal vertebra. All the bone has the same apparent structure as that of the external parts of the tumour on the femur. *Hunterian.*

3239. A vertical section of a femur, of which the lower end, through a length of nearly six inches, is surrounded by an osteoid tumour, like that of the femur last described. The tumour forms a layer about an inch thick around every part of the shaft, and is irregular and slightly nodulated on its surface. Part of it is of ivory hardness; but the greater part, and that most distant from the shaft, is finely porous and crumbling, with a fasciculated arrangement of part of its surface, like pumice-stone. The

boundary between the outer surface of the shaft and the tumour is in nearly every part distinct, though they are closely connected. The medullary tube, in the part corresponding with the tumour, is nearly filled with osseous tissue as hard as ivory; and about three inches higher up than the external tumour, the medullary tube contains an isolated mass of the same osteoid substance. *Hunterian.*

3240. Another section of the same femur. *Hunterian.*

3241. The lower half of a femur, surrounded and filled with a large, heavy, and very irregular osteoid growth, which bears a close resemblance to both the preceding tumours. *Hunterian.*

3242. Sections of a hard and heavy osteoid tumour, like the preceding. It is not known from what part it was removed. *Hunterian.*

3243. A tibia and fibula, with pieces of a large osteoid tumour, in which the head of the fibula was imbedded. The bone composing these pieces of the tumour is hard and heavy, but brittle, and capable of being easily rubbed to powder. In its general arrangement it resembles bundles of fibres variously interlaced and heaped together; and hence its surface derives a fasciculated appearance, resembling that of some preceding specimens. The upper part of the fibula is lost in the tumour: the rest of its shaft, and such parts of that of the tibia as appear to have been in contact with the tumour, are thinly covered with new bone of ordinary character.

3244. The lower half of a femur, and the upper halves of a tibia and fibula, together with a large, elongated, oval, osteoid tumour. The tumour is attached to nearly the whole of the posterior and lateral surfaces of the lower third of the femur, and to the ends of the tibia and fibula, so that it surrounds and has immoveably fixed the knee-joint. Its base is rather constricted, and at the upper part it far overlaps the femur. A part of it also extends from the front into the cavity of the joint, impacted between

the heads of the femur and tibia. Like the preceding specimens, the tumour is composed of a hard and heavy, dry, osseous substance, arranged so as to present a coarsely fibrous aspect; and its surface is uneven and fasciculated, bundles of osseous fibres running in various directions on it. It measures ten inches in its extreme length, and nearly three inches in its greatest thickness. The femur, near the part to which the growth of bone is fixed, appears healthy in its texture, but is rather enlarged. The popliteal artery, vein, and nerve are shown passing over the surface of the growth, and in one situation running through it. The posterior tibial and peroneal veins are distended and varicose.

The patient was a strong muscular wheelwright, forty-five years old. He ascribed the disease to a blow received five years before the limb was removed, while he was in the army. The knee-joint regularly and slowly enlarged, and at last became the seat of severe pain, like that of neuralgia. The leg also became very œdematous. The limb was therefore amputated. In the operation the femoral vein bled profusely and very obstinately; but the patient recovered, and remained well for five years, at the end of which he began to suffer severe attacks of pain in the stump, and an enlargement at the inner side of the remaining part of the femur was felt. These increased, and a second amputation was performed. The femoral vein again bled as much as before, but the patient again recovered speedily from the effects of the operation. The stump of the femur removed in the second amputation is the next-described specimen.

*From the Museum of George Langstaff, Esq.*

3245. The stump of the femur mentioned in the preceding description, with an osteoid tumour formed by its inner side. The stump is quite healthy, and the tumour is not attached to it, but appeared to be intimately connected with the outer surface of the periosteum. The tumour is very irregular in its form, about four inches in length, and three inches in its greatest breadth and thickness. It has the same fibrous and fasciculated appearance, and the same general plan of structure, as that in the preceding preparation: the femoral artery runs through its middle.

Two years after the second amputation, a growth of osteoid substance began to form about the stump. It regularly increased, but although sometimes painful, and producing much inconvenience by its increasing size, it did not materially affect the patient's general health, and he was able to pursue his business actively, and was strong and robust, for fourteen years after the second amputation. The integuments over the

tumour then beginning to inflame and slough, he died, nearly twenty-five years after the commencement of the disease. The tumour with which he died is shown in the next specimen.

- 3245A. The mass of osteoid disease referred to in the preceding history. It is of an irregularly roundish form, and presents the same fasciculated and fibrous appearance on its surface, and the same soft, friable, and crumbling texture, as many of the preceding osteoid tumours do. It measures twenty-nine inches in circumference. The remains of the femur are lost in it, and it involves nearly the whole of the os innominatum. Parts of the ischium and ilium may be traced by their external forms, but they are nearly covered with osteoid growths, and contain the same kind of morbid osseous structure in their cancellous tissue.

*Presented, with the foregoing history, by W. R Barlow, Esq.*

3246. The osseous matrix of the horn of an ox, on the extremity of which is a large bony tumour, closely resembling the lighter forms of osteoid tumours. Its substance is dry, brittle, light, porous, finely laminated, and filamentous; it looks as if composed of slender grey osseous fibres, radiating in tufts from the end of the matrix, with which its tissue has completely coalesced.

*Hunterian.*

3247. The rib of a horse, surrounded through nearly its whole length with a thick irregular growth of dry, light, and porous bone, like the osseous part of an osteoid tumour. The substance of the rib is involved in the growth; and at one end its outer surface seems to be expanded into that of the tumour. On the surface of the tumour there are numerous large, round, and oval apertures, leading directly, or by sinuous canals, into its interior.

*Hunterian.*

3248. Three ribs of a horse, exhibiting a less extent of a similar disease. On that rib in which the disease is most advanced there is an elongated oval tumour, about six inches long. It presents the same general characters as that in the preceding preparation, and shows more evidently that the

growth commenced within the rib and expanded its walls. In the rib which is least diseased the posterior wall is entire; the anterior wall and margins alone are expanded round the growth. In all these cases the growth appears to have commenced near the vertebral end of the rib, and thence to have extended towards the sternal end.

*Presented by Sir William Blizard.*

S D. *Bones variously altered by the growth of Tumours.*

3249. The lower part of a femur, the end of which is expanded into a large and irregular osseous cyst. The cyst is incomplete at its posterior part; its walls vary from half a line to a quarter of an inch in thickness; their exterior is smooth, but their interior is rendered very irregular by ridges forming imperfect partitions across its cavity. The articular surfaces of the condyles are ulcerated. The shaft of the femur ends abruptly at the upper part of the cyst. It is probable the cyst was filled with a malignant growth, which had originated in the cancellous tissue of the lower end of the femur.

*Hunterian.*

3250. The upper part of a tibia, similarly diseased. The head is expanded into a spheroidal cyst, about six inches in diameter, and four inches in depth. The osseous walls of this cyst are thin and incomplete, presenting several large apertures, and formed in part by an irregular network of osseous bands. The apertures were probably closed in with periosteum. The articular surfaces are ulcerated and rough. The shaft of the tibia terminates abruptly at the cyst, near which a small quantity of new bone has been formed on its surfaces.

*Hunterian.*

3251. A similar specimen.

3252. The upper part of a tibia, in the head of which there is a large cavity around which the walls have grown into a thin, osseous, and membranous



cyst. The cyst is laid open behind. It may have contained either pus or a medullary tumour. *Hunterian.*

3253. Part of a tibia, of which the lower end is almost entirely destroyed. From what remains of its walls, it seems to have been first expanded; and its destruction was probably consequent on the growth of a malignant tumour within it. *Hunterian.*

3254. A lower jaw, the right half of which is distorted, and in great part destroyed; apparently, by the growth of a tumour in its interior.

3254A. A skull, with the osseous part of a large tumour connected with the bones of the right side of the face. The tumour had its origin in the antrum, was five years in progress, and in its growth destroyed all the right orbit except its roof, and involved or destroyed the whole of the right malar, palate, and superior maxillary bones. The part which has remained after maceration consists of an oval mass of light cancellous bone, about five inches in its chief diameter, and very slightly connected with the remaining bones of the face. At its lowest part it preserves somewhat of the form of the alveolar border of the upper jaw, and the incisor, canine, and bicuspid teeth are implanted in it. A circular portion of the frontal bone, just above the right temple, is thin, and perforated by several small apertures, apparently in consequence of the growth of a tumour from the dura mater.

A portrait of the patient (a woman who died in the Westminster Hospital) is by the side of the preparation.

*From the Museum of John Heaviside, Esq.*

3255. The upper part of a skull, which, by the progress of malignant growths on the dura mater and in its substance, has been perforated in several situations, and has numerous deep circular ulcerated cavities, with sharp broken margins, in its internal table and diploe. The diseased structures were developed chiefly along the course of the longitudinal sinus, near which, besides presenting several deep excavations from

within, and a perforation an inch wide at the angle of the occipital bone, the substance of the skull is riddled with numerous small round apertures, of which some open internally, some externally, and others pass completely through. Around the margins of the large apertures and cavities small quantities of new bone are deposited on the inner table, but, with this exception, the parts of the skull which intervene between the ulcers are quite healthy.

“ From the Hon. George Grenville.—On opening the body, many other bones were found in the same condition, where, in place of the bone that was removed, there was found a curdly substance.”—*Hunterian MS. Catalogue*. Spontaneous fracture of some of the bones occurred during life.

3256. Portion of a rib from the same gentleman, in the interior of which is a cavity that opens widely on both its sides. Its broken end exhibits part of a similar cavity, and its walls are perforated by numerous small apertures.

*Hunterian.*

3257. The lower end of the left humerus of the same gentleman. The substance of the shaft, through a length of nearly three inches, was nearly all destroyed by a malignant growth in the medullary tube. The remaining portion of the wall has a small quantity of new bone deposited upon its outer surface. It broke, under a very slight force, a short time before death.

*Hunterian.*

3258. The upper half of the right femur of the same gentleman. A large portion of its shaft was destroyed by the growth of a tumour in the medullary tube; and the remains of the wall, covered with new bone, and neither expanded nor much thinned, broke under a slight force.

*Hunterian.*

3259. A similar specimen, except in that no new bone is formed.

*Presented by Sir Everard Home.*

3260. A skull, in the walls of which are numerous holes of various size and shape, with abrupt sharply-jagged edges, which appear to have been

consequent on the growth of malignant tumours on the dura mater, or in the interior of the bone. The chief disease is on the left side, in which, in addition to several smaller perforations of the skull, the greater part of the temporal fossa, together with the basilar portion of the occipital bone, the left side of the body, and the left alæ, and pterygoid processes of the sphenoid bone, have been destroyed. All the apertures are larger on the inner than on the outer surface of the skull; and, besides them, there are several cavities on the interior which have not yet proceeded to perforation. Some of these cavities reach only to the diploe; while over others, which are somewhat deeper, the outer table is perforated by a few very minute apertures, the indications of the commencement of the process by which its more complete destruction would have been effected. At one situation alone, near the upper part of the occipital bone, there is an ulcerated cavity opening externally, without any disease of the internal table. Around many of the apertures, both on the external and, to a greater extent, on the internal surface of the skull, thin layers of new bone have been deposited.

*Hunterian.*

3261. The upper part of a skull, in which there is in the frontal bone a circular perforation two and a half inches in diameter, with abrupt jagged edges. The pericranium over the aperture is not completely destroyed, and in the part which is preserved there are several small lamellæ of bone, the remains of the external table, but they are connected to the margins of the aperture by the pericranium alone. On the interior of the rest of the skull there are several deep ulcerated cavities, with sharp abrupt margins, which are for the most part circular in form, and from two to six lines in diameter. They extend through the inner table and diploe; the external table over them is very thin, and in a few situations is perforated by small apertures. The portions of the skull intervening between the ulcers are healthy. The disease was probably, like the preceding, consequent on the growth of malignant tumours of the dura mater.

*Hunterian.*

3262. The upper part of a skull, in which there are numerous circular and

oval apertures and deep cavities, like those in the two preceding specimens. They vary from two lines to upwards of an inch in diameter: the margins of all of them are abrupt and sharp; and in some places two or more have coalesced. Of those which have not penetrated the skull, some open through the external, some through the internal table; in nearly all, the diploe is destroyed to a greater extent than the compact tissue of the skull. The intervening parts of the skull are healthy, but thin and light.

*Presented by H. L. Thomas, Esq.*

3263. Portion of a skull, in which there are several perforations and cavities exactly like those just described. They were produced by the growth of medullary tumours of the bone and dura mater.

From the same patient as the preparations of malignant tumours of the bones described in vol. ii., Nos. 826 to 832.

*Hunterian.*

3264. Portion of a skull, removed with a trepan. There is a perforation in it, such as may have been produced by a tumour growing from within outwards.

*Hunterian.*

3265. A similar portion of a skull, removed with a trepan. The outer table is slightly ulcerated. Part of its external surface has perished, and is surrounded by a shallow groove.

*Hunterian.*

3266. A scapula, in which the glenoid cavity, acromion, and coracoid process have been destroyed by the growth of a large tumour.

*Hunterian.*

3267. The upper part of a skull, in which an irregular ulceration has destroyed the greater part of the roof of each orbit, all but a small portion of the right side of the frontal bone, the anterior parts of both parietal bones, the outer surface of the left ala of the sphenoid bone, and the anterior part of the squamous portion of the left temporal bone. The margins of the ulcer are irregular, but in many places abrupt. In part of its extent the ulcer has destroyed the whole thickness of the skull, exposing the dura mater, upon which there are numerous isolated small spots of can-

cellous bone, and which is itself perforated in a few small places; but the greater part of the base of the ulcer is formed by an uneven layer of bone, the remains of the ulcerated skull thickened and condensed. The interior of the skull adjacent to the ulceration is healthy, and the diploe is not more widely destroyed than the compact layers.

The patient was a man thirty-two years old. The integuments over the disease of the skull were involved in a large malignant-looking ulcer, surrounded by dark, livid, and tense skin. Beneath the ulcer was a greyish soft substance, in which the fragments of bone fixed on the dura mater were imbedded. The disease had existed five years, and had commenced in a small hard tumour in the scalp. There were present, also, signs of affection of the cervical part of the spine, consisting in a considerable projection of its lower vertebræ, partial loss of sensation and voluntary motion, severe pain about the shoulders, and inability to raise the head. The left eye was at last completely destroyed, and pushed from the orbit, and the ulceration extended to the left zygoma, and to parts of the ethmoid bone.

Nine years before death the patient had syphilis, and took a large quantity of mercury; but the healthiness of what remains of the internal surface of the skull, and of the diploe at the borders of the ulcer, and the regular progress of the ulceration over the outer surface of the bones, and thence through their substance, as well as the general aspect of the remaining bone, make it probable that the destruction in this case was consequent on the bone becoming involved in some cancerous disease of the integuments.

*From the Museum of Robert Liston, Esq.*

3268. A tibia and fibula. Two inches of the middle third of the fibula have been completely destroyed, and of two inches more nothing remains but a thin shell, which is fixed by new bone to the adjacent part of the tibia. The rest of the shaft of the fibula is thinly covered with new bone. Similar deposits have taken place on many parts of the shaft of the tibia, but at the part which is opposite to the destruction of the fibula its wall is superficially ulcerated. The changes are said to have been caused by the extravasation of blood in this part: they have the aspect of those caused by malignant growths; perhaps a medullary tumour existed, in which a large extravasation of blood had occurred. *Hunterian.*

3269. An inferior maxillary bone, of which the greater part of the right horizontal ramus, including all its alveolar border, has been destroyed;

probably by the growth of a tumour. There is some ulceration also of the inner surface of the ascending ramus; and around all the ulcerated parts, as well as on parts of the left side of the bone, a thin layer of new bone has been formed.

*Hunterian.*

### 9. *Entozoa in Bones.*

3270. Section of the humerus of an ox, in which the medullary cavity was filled by an acephalocyst hydatid, as described in vol. ii., p. 201, No. 864. It has been macerated and dried. The interior of the cavity which contained the hydatid is nearly smooth, but presents several slightly elevated ridges, which at the lower part form imperfect partitions.

*Hunterian.*

3271. The right half of the lower-jaw of a sheep, the anterior part of which is dilated into a cyst of a regularly oval form, measuring three and a half inches in longitudinal, and two inches in transverse, diameter. Its walls are not more than one-eighth of a line in thickness, and are smooth on the greater part of both their surfaces. There is an aperture at the anterior part of the cyst, which appears to have been formed by ulceration, and around which the surface is rough and irregular. The separate part of the outer wall was broken off to exhibit the interior of the cyst. The cyst is believed to have contained hydatids.

*Hunterian.*

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SERIES LXIV.—Appendix. INJURIES AND DISEASES OF ANTLERS.

- 3271A. Portion of the horn of a fallow-deer, in which one of the antlers was fractured, and has been smoothly re-united. *Hunterian.*
- 3271B. The horn of a fallow-deer, in which the beam appears to have been fractured and re-united; the horn is deformed and small in consequence of the injury. *Hunterian.*
- 3271C. Numerous antlers, showing the imperfection and irregularity of their growth in consequence of castration.

The general rule which these specimens were probably intended to prove is, that if a buck be castrated while his antlers are growing, their growth is checked, they remain as if truncated, and irregular nodules of bone project from their surface; but if the castration be performed when the antlers are full grown, these are shed in the usual manner, and, in the next rutting season, only low conical stumps of bone are produced in the place of antlers.

*Hunterian.*

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SERIES LXV.—INJURIES AND DISEASES OF JOINTS.\*

1. *Dislocations by External Violence.*

1 a. *Of the Clavicle.*

3272. The clavicle and scapula of a young person. The clavicle was dislocated from its articulation with the acromion, with which it is now connected, by a band of ligament nearly an inch long. A portion of bone, which appears to have been broken off the acromion, is imbedded in this band.

*Hunterian.*

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\* Corresponding with Series XIII., vol. ii., p. 202.

1 b. *Dislocations of the Humerus.*

3273. The bones of a shoulder-joint. The head of the humerus was dislocated forwards, and its posterior half rests on a shallow concave surface of new bone formed on the scapula, in front, and on the inner side, of the glenoid cavity, and just below the coracoid process. The anterior half of the original articular surface of the humerus has thin deposits of new bone on it, and a large projecting mass of new bone has been formed just below the great tuberosity, apparently for the attachment of the supra-spinatus and infra-spinatus muscles. The glenoid cavity is reduced in size; its anterior margin is a little worn down; and its surface is rough.

*Hunterian.*

3274. A scapula and humerus. The head of the humerus was dislocated forwards and inwards many years before death. Its posterior part rested on a concave surface, formed partly by the anterior edge of the glenoid cavity, and partly by some new bone deposited on the front of the scapula, just below the coracoid process; and that portion of the head which was next the anterior margin of the glenoid cavity is grooved and flattened, in adaptation to that margin and the adjacent new articular surface. The anterior part of the glenoid cavity is worn down by the pressure of the humerus; its edge fits in the groove on the humerus just described; its posterior part retains its articular surface, and was in relation with a flat surface behind the groove at the base and posterior part of the head of the humerus.

The limb was capable of free motion, and was nearly as useful as the other.

*From the Museum of Robert Liston, Esq.*

3275. A scapula and humerus. The head of the humerus was dislocated downwards, forwards, and inwards many years before death, and was not reduced. It became flattened and enlarged, and its articular surface

rested on a deep concave surface of new bone deposited on the front and inferior costa of the scapula, immediately below and on the inner side of the glenoid cavity. A large irregular prominence of new bone is directed backwards and upwards from the great tuberosity of the humerus: it is probable, the elongated supra-spinatus and infra-spinatus muscles were attached to it. The glenoid cavity has lost its original form, its outline and surface are irregular, and all its articular cartilage is removed. The humerus appears to have moved freely in its new articulation.

*From the Museum of John Howship, Esq.*

3276. A scapula and humerus. The humerus was dislocated backwards. The anterior part of the lesser tuberosity rests in the glenoid cavity. The head of the bone is rotated so that its articular surface looks almost straight backwards, and part of its anterior border is absorbed. The posterior border of the glenoid cavity, on which the head of the humerus probably rested, has been cut away.

*From the Museum of Sir A. P. Cooper.*

### 1 c. *Dislocations of the Radius and Ulna.*

3277. The lower end of an humerus, with a radius and ulna. The radius was dislocated backwards, and that which was the outer margin of its head is now turned forwards, and is in contact with the posterior margin of the external condyle. The shaft of the radius is fixed in extreme pronation, and both it and that of the ulna are flattened where they cross each other.

*Hunterian.*

3278. An humerus, radius, and ulna. The ulna was dislocated outwards, and the radius forwards. The great sigmoid cavity of the ulna now articulates with a deeply grooved surface on the lower part of the external condyle of the humerus, and the inner lateral surface of the olecranon articulates with the inner border of the trochlea. The head of the radius rests upon the anterior surface of the external condyle, directly in front

of the ulna. The bones are little altered in form. The joint appears to have possessed a limited mobility, and to have been habitually flexed with the radius and ulna in a plane parallel with the axis of the humerus.

3279. The lower end of an humerus, with the bones of the fore-arm and of part of the hand. The radius was dislocated forwards and upwards, and its head (part of which has been broken off apparently after death) rests on the front and outer part of the humerus, an inch above the lower border of the outer condyle. In this position it is united to the humerus; and osseous union has also taken place between it and the ulna, and between the articular surfaces of the ulna and the humerus. In adaptation to the shortening of the fore-arm by the dislocation of the radius, the lower end of the ulna is remarkably bent forwards, and nearly dislocated from its radial articulation. Its articular surface also is turned forwards, and, in correspondence with this change, the width of the carpus is diminished. The ring and little fingers are absent, but probably were removed after death.

3280. The bones and parts of the ligaments of an elbow-joint. The radius and ulna were dislocated outwards, carrying with them the outer half of the articular end of the humerus, through which two fractures extended in oblique lines from the outer margin into the joint. The dislocated parts were not reduced, and appear to have remained a long time in their present position. The edges of the fractured portions of the humerus are rounded-off and smooth, but no union has taken place between them. The inner margin of the olecranon rests against the outer part of the trochlea of the humerus. All the articular portion of the ulna is misshapen, and on the coronoid process there is a flat smooth surface, over which the biceps muscle probably was stretched. The head of the radius is enlarged and flattened; it retained its articular connection with the ulna, and with the outer condyle, which was broken off, and dislocated with it. The several parts of the joint appear to have been capable of motion.

*From the Museum of Joshua Brookes, Esq.*

1 d. *Dislocation of the Bones of the Hand.*

3281. The bones of a hand. The carpal end of the fourth metacarpal bone has been dislocated backwards, and half its articular surface has lost its relation to the unciform bone. Its radial margin is united by bone to the adjacent margin of the third metacarpal bone. *Hunterian.*

1 e. *Dislocations of the Bones of the Lower Extremity.*

3282. The bones of a left hip-joint. The femur was dislocated into the obturator foramen long before death. Its head is lodged inextricably, but with free capacity for motion, in a cavity formed by new bone, deposited within the obturator foramen, and in deep ridges around its borders. This new osseous articular cavity is almost regularly hemispherical, its inner wall forming a deep convex prominence in the pelvis in the situation of the obturator foramen, and its margin being imperfect in only a small extent at the inner part. Anteriorly and externally the margin of the cavity presents an irregular projection of new bone, which has grown inwards and locked-in the head of the femur. The cavity of the old acetabulum remains, but is much contracted, and its inner part is traversed by the high margin of the new articular cavity. The head of the femur has nearly retained its natural form, though deprived of its articular cartilage, and in parts superficially ulcerated. The neck is of its natural length, but grooved and irregular, in correspondence with the form of the walls of the new acetabulum.

There is every appearance that the limb from which these parts were taken possessed almost all its original mobility, though it must have been nearly two inches longer than the other.

*Purchased.*

3283. The corresponding ends of a femur and tibia, with the patella. The tibia was dislocated forwards and a little outwards, and, in this position,

new articular surfaces are formed on the upper and back part of the tibia, in adaptation to the condyles of the femur. The outer border of the external condyle rests in a deep groove on the middle and back part of the external articular surface of the tibia; and the surface of the inner condyle is adapted to a broad slightly concave surface, worn down upon the upper and posterior margin of the internal articular surface of the tibia. The patella retained its natural relation to the femur. All the articular cartilages were removed. The subjacent bones are porous, except where they moved on each other; on those parts they are hard and smooth. New bone has been abundantly deposited around their articular ends, and upon their shafts.

The cause of this dislocation is not known; it was probably the result of injury.

*Hunterian.*

3284. The bones of an ankle-joint and foot. There has been a comminuted fracture of the lower ends of both the tibia and fibula, and the tibia has been pushed forwards and outwards, half over the astragalus. The malleoli, which were both broken off, have retained their places, though drawn rather forwards near their junction with the shafts. All the fractured portions are firmly united, and the several articular surfaces of the ankle-joint have been ulcerated and closely united by bone.

*Presented by Anthony White, Esq.*

3285. The bones of a foot, and the lower parts of a tibia and fibula. After dislocation of the tibia and fibula outwards, with fracture of both malleoli, and a vertical fracture of the articular portion of the tibia, the parts appear to have been reduced and partially re-united. The fracture of the fibula is repaired; and new bone has been formed about the margins of the fractured portions of the tibia, but they are not united. Parts of the articular cartilages of the ankle are removed, and the ends of the bones are superficially ulcerated. The sole of the foot, especially its anterior part, is turned inwards.

*From the Museum of Sir A. P. Cooper.*



2. *Ulceration of the Articular Surfaces of Bones.*

2 a. *In the Upper Extremity.*

3286. A scapula, in which the glenoid cavity is deeply and irregularly ulcerated, and altered in form by the removal of its anterior and posterior margins, and the heaping-up of new bone above and below it.

*Hunterian.*

3287. A scapula and humerus, the corresponding articular surfaces of which are ulcerated. The ulceration is for the most part superficial, and has affected equally the whole articular surface of each bone; but it has made three deep circular pits in the head of the humerus, and has destroyed the borders of the glenoid cavity. New bone has been formed around the diseased joint, and the bones bear in every part marks of increased vascularity.

*Hunterian.*

3288. A scapula and humerus, of which the corresponding articular surfaces have been wholly destroyed by the further progress of such ulceration as is shown in the preceding specimen. The head of the humerus has been removed, and a deep irregular cavity formed in the upper part of the shaft. The glenoid cavity is destroyed; a deep narrow cavity is formed in the adjacent part of the scapula, and the ulceration has extended into the base of the coracoid process. New bone has been abundantly formed around, and for some distance beyond the diseased joint: it is hardened, and there are no marks of increased vascularity in the adjacent parts of the bones: probably the ulceration had ceased to make progress.

*Hunterian.*

3289. An humerus, of which a great portion of the head has been removed by ulceration. Nothing of it remains but a low conical projection, with an even surface of apparently healthy cancellous tissue.

*Hunterian.*

3290. The left humerus of an horse. The head has been nearly destroyed by deep and irregular ulceration. Cavities of various depths are formed between it and the tuberosities, and its border, as well as the greater part of the ulcerated surface, is covered with thick deposits of spongy new bone.  
*From the Museum of Joshua Brookes, Esq*
3291. The bones of an elbow-joint, the articular surfaces of which are superficially and uniformly ulcerated. Very little of the compact laminæ forming the articular surfaces remains. Porous new bone has been formed upon the shafts near the diseased joint.  
*Hunterian.*
3292. A radius and an ulna, of which the upper articular surfaces are superficially ulcerated. New bone is deposited on the upper part of their shafts.  
*Hunterian.*
3293. The lower end of an humerus, the articular surface of which is similarly ulcerated.  
*Hunterian.*
3294. Similar specimens, in which the ulceration has proceeded to a greater extent, making deep cavities in the articular surfaces, and destroying the borders, of all the bones of an elbow-joint.  
*Hunterian.*
3295. An ulna, the superior articular surface of which is uneven, hard, and somewhat tuberculated, as if it had healed after being ulcerated.  
*Hunterian.*
3296. The upper part of an ulna, of which the articular surface is destroyed by ulceration. The parts adjacent to it are smoothly covered with new bone, and parts of the ulcerated surface are hardened.  
*Hunterian.*
3297. A radius, probably from the same arm as the preceding specimen. Its upper extremity is reduced to a size less than that of its shaft, and is turned obliquely backwards, but bears no marks of recent ulceration.  
*Hunterian.*

3298. A radius, of which the lower articular surface is nearly all removed by superficial ulceration. New bone is abundantly deposited on the adjacent part of the shaft. *Hunterian.*

2 b. *Ulceration of the Articular Surfaces of Bones of the Lower Extremity.\**

3299. The lower end of a femur, of which the condyles are deeply and irregularly ulcerated. The inner condyle is much altered in shape by new bone formed around part of its inner border, and by the flattening and hardening of that portion of its ulcerated surface, which, it is probable, rested upon the tibia. *Hunterian.*
3300. The lower end of a femur, in which the whole surface of the condyles is ulcerated. There is also a deep ulcerated cavity in the internal condyle. The lower and posterior part of the outer condyle has, after ulceration, been expanded and hardened on its surface. *Hunterian.*
3301. The corresponding ends of a femur and tibia, in which nearly the whole of both articular surfaces is ulcerated. There are, besides, a deep ulcerated cavity in the posterior part of the outer condyle of the femur, and one larger and deeper in the outer part of the head of the tibia, in which the margin of the outer condyle rested, the knee being bent far inwards. The surface of the lower and posterior part of the inner condyle of the femur appears not to have been ulcerated, but is covered with a hard polished layer of bone, and there is a small portion of a similar tissue on the corresponding inner part of the head of the tibia. *Hunterian.*
3302. The corresponding ends of a femur and tibia, in which nearly the whole of both articular surfaces is ulcerated. There is a deep ulcerated

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\* The specimens of ulcerative disease of the bones of the hip-joint are placed separately, in Nos. 3312 to 3331.

cavity in the outer part of the head of the tibia, into which is adapted a growth of bone from the lower surface of the outer condyle of the femur. New bone has been abundantly formed on the parts adjacent to the articular surfaces. *Hunterian.*

3303. The corresponding ends of a young person's tibia and femur, the articular surfaces of which are superficially ulcerated. Their shafts also are greatly reduced in size, and their texture is light.

*From the Museum of Robert Liston, Esq.*

3304. A patella, the whole articular surface of which has been evenly removed by ulceration. *Hunterian.*

3305. The upper part of a tibia, of which the articular surfaces have been evenly removed by ulceration. The surface of bone exposed by the ulceration appears, as it does also in many preceding specimens, to be quite healthy. *Hunterian.*

3306. The upper part of a tibia, in the articular end of which there are several deep ulcerated cavities. The whole articular surface is destroyed. *Hunterian.*

3307. The lower part of a tibia, in which all the articular surface has been evenly ulcerated. The internal malleolus has been removed by fracture or by ulceration. *Hunterian.*

3308. The upper part of a fibula, in which the articular surface is ulcerated, and new bone abundantly formed on the part adjacent to it. *Hunterian.*

3309. A fibula, in which the lower articular surface is ulcerated. New bone is deposited on the surface of the whole shaft. *Hunterian.*

3310. An astragalus, in which part of the surface of its posterior articulation with the os calcis is superficially ulcerated. *Hunterian.*

3311. The lower halves of a tibia and fibula, united by a large quantity of new bone accumulated around their articular extremities. Their articular surfaces are enlarged, superficially ulcerated, and, over a small extent, hardened, grooved, and polished. There is a deep osseous channel, where the tendons of the flexor muscles passed behind the internal malleolus.

2 c. *Ulcerative Disease of the Bones of the Hip-Joint.*

3312. A pelvis and femora. The right acetabulum is somewhat reduced in depth by the growing-up of its inner wall. The head of the right femur appears to have been superficially ulcerated, and its surface is rough, in part cancellous, and in part covered with a layer of new bone. The neck of this femur also is shortened an inch and a quarter, and new bone is irregularly deposited about its junction with the head, and at the anterior line of attachment of the capsular ligament. The left side of the pelvis and the left femur are healthy.

It is probable these changes were consequences of injury.

*From the Museum of Robert Liston, Esq.*

3313. The bones of a left hip-joint. There has been superficial ulceration of the head of the femur and the acetabulum, the exposed surfaces of which are for the most part smooth, and like those of healthy cancellous tissue. New bone has been formed around the acetabulum, and upon the inner surface of the ilium and os pubis, in the course of the iliac muscle, beneath which there was also superficial ulceration. The bones are light and brittle. *Hunterian.*

3314. The bones of a right hip-joint. The head of the femur is, as in the last specimen, superficially and evenly ulcerated. The acetabulum also is similarly ulcerated over nearly all its surface, and its walls are perforated by several large apertures which open into the pelvis and iliac fossa.

Part of the inner surface of the ilium, also, is ulcerated. New bone is thinly deposited around all the ulcerated parts. *Hunterian.*

3315. A sacrum, os innominatum, and upper part of a right femur, from a case in which disease of the hip-joint appears to have been complicated with psoas abscess. The inner surface of the posterior part of the ilium is superficially ulcerated. Part of the anterior half of the sacro-iliac symphysis is ossified. The acetabulum is much enlarged by the deep ulceration of its borders and base, and a large portion of its upper and inner wall is wholly removed. The upper half of the head of the femur has been destroyed by ulceration; the exposed surface, like that of the ulcerated acetabulum, appears to be formed of healthy cancellous tissue. New bone has been formed around all the ulcerated parts. All the bones are light and fragile. *Hunterian.*

3316. A pelvis, with the upper parts of the thigh-bones of a girl about sixteen years old. Nearly the whole of the left acetabulum has been destroyed by ulceration. Nothing remains of the left ischium but a separate shapeless ulcerated piece of bone, with a trace of the surface of its tuberosity. The ilium, for a considerable distance above the acetabulum, is deeply and irregularly ulcerated, and covered with new bone. The os pubis is superficially ulcerated at its outer extremity: but, while the acetabulum, in which it is probable that the disease commenced (perhaps in the tissue connecting the several portions of the os innominatum), is thus extensively destroyed, the head and neck of the femur are only superficially ulcerated. The right side of the pelvis is healthy, except in being, like all the other bones, very light and brittle; but there is superficial ulceration of the trochanters of the right femur, and of the upper part of the left femur, with the production of some new bone, the consequence, probably, of pressure in the recumbent position of the body.

*Presented by Robert Keate, Esq.*

3317. The bones of a hip-joint, with part of the sacrum. The head of the femur is almost wholly removed by ulceration: a low conical pro-



jection of apparently healthy cancellous tissue is all that remains surmounting the neck. There are also traces of superficial ulceration, and small deposits of bone, upon the neck and shaft of the femur. The acetabulum is reduced in depth, but much increased in width, by the ulceration of its borders; at its centre there is a small aperture into the pelvis, and, above it, a flat smooth surface upon the anterior and lower part of the ilium, on which the head of the femur rested after dislocation. In front of this surface also there are two small ulcerated apertures through the anterior inferior spine of the ilium, and all round it new bone has been deposited. At the sacro-iliac symphysis the surfaces of both bones are superficially ulcerated, and opposite the middle of the articulation there is a large oval aperture through the ilium. All the bones are light and spongy.

From a man between twenty and thirty years old, who died hectic, with extensive abscesses about the hip and in the iliac fossa.

*From the Museum of Robert Liston, Esq.*

3318. The bones of a left hip-joint. The borders of the acetabulum, especially the anterior and superior border, have been destroyed by ulceration; its base also is nearly all ulcerated, and at the middle there is a large aperture into the pelvis. Hard and heavy new bone has been formed upon the adjacent parts of the os innominatum. The head of the femur is small and conical; its surface is uneven, but hard, and, anteriorly, is perforated by many small round apertures, like worm-eaten wood. Its base is enlarged by the accumulation of hard and heavy new bone around it, and upon the neck and at its lower margin there is a short broad prominence of new bone, which appears to have fitted-in beneath the notch of the acetabulum, and thus to have aided in the support of the pelvis. Both the bones, where they are not ulcerated, are strong and heavy, indicating that the disease of the joint was at least partly recovered from.

*Hunterian.*

3319. The bones of a left hip-joint. The head of the femur is deeply and unevenly ulcerated: its exposed surface is, for the most part, hard and

nodulated, and new bone has been formed around its base, especially at the anterior part. A large quantity of new bone has also been formed below the trochanter minor, and the whole shaft is hard and heavy. The acetabulum has been ulcerated, but not deeply, nor at its borders, and new bone has been formed at its base. The nodulated surfaces of the acetabulum, and of the anterior part of the head of the femur, appear to have been closely adapted, in such a position, that the limb must have been very much inverted; and in this position it is probable that the projections of new bone below the trochanter minor, and a similar one on the upper and outer part of the os pubis, served for the attachment of muscles that were stretched, and perhaps ligamentous. *Hunterian.*

3320. The bones of a left hip-joint. A large irregular ulcerated aperture extends through the bottom of the acetabulum, around the border of which, on the inner side, some hard new bone is formed. The rest of the cavity is much reduced in size, and altered in shape, by the formation of bone on its surface and thickening its walls. The surface of this new bone is for the most part smooth, though irregular, and at its upper part is for a small extent hardened and polished. New bone is also irregularly deposited around the acetabulum on its outer surface. The greater part of the head of the femur has been removed by ulceration. The base, which alone remains, is altered in form, but not enlarged, and its surface is for the most part hard, polished, and perforated, in correspondence with the polished portion of the surface of the acetabulum, on which it had a limited motion. At the lower border of this remaining part of the head, a process has grown out, which passed into the aperture through the bottom of the acetabulum. The general texture of both bones appears healthy, and they are of ordinary size and weight.

3321. The bones of a hip-joint. The cavity of the acetabulum is nearly filled up with cancellous bone, firmly fixed to its margins, but leaving, at the bottom, a cavity which communicates with the pelvis by several small apertures through its attenuated inner wall. On the outer wall of the ilium, above and behind the acetabulum, there is an accumulation of

bone, nearly an inch in depth, and presenting a slightly concave oval surface, three inches in length, composed of hard cancellous tissue. There is a similar heaping up of bone, but of less extent, above and in front of the acetabulum. Nearly the whole of the head of the femur has been removed; the remains of it present a smooth and slightly convex cancellous surface, which is continuous with that of a large mass of new bone deposited upon and below the trochanter minor. The two surfaces together are of nearly the same size as that of the bone formed above and behind the acetabulum on which they fitted, but were probably immoveable. There is a considerable deposit of new bone on the posterior part of the neck of the femur, and on other parts adjacent to the hip-joint. The remains of both the bones are strong, and of full size and weight.

From a person of middle age, whose limb had for a long time been much shortened.

*From the Museum of Robert Liston, Esq.*

3322. The bones of a hip-joint. The acetabulum is removed to a greater than the natural distance from the foramen ovale, and is reduced to a broad shallow depression, by the ulceration of its margins and the thickening of its inner wall; but its surface is smooth and compact, and the bones around it appear healthy, though very small. The head of the femur is reduced to a small disk-shaped body, little more than an inch in diameter, which is set on a short pedicle between the trochanters. The articular surface of this remaining part of the head is smooth, but perforated by many apertures, and in one situation polished; its tissue appears sound, but light and dry. The surface of the lesser trochanter is flattened, for it rested on the posterior margin of the notch of the acetabulum, the limb (though probably moveable) appearing to have been habitually in a position of extreme flexion.

*Presented by William Long, Esq.*

3323. An os innominatum and a femur. The head of the femur, much reduced in size and altered in its form, was dislocated upon the dorsum of the ilium, on which its flattened inferior and internal surface rested on a shallow concave surface, about an inch above and behind the aceta-

bulum. The two surfaces of bone are simply adapted to each other: neither of them is changed in texture by friction, nor is any new bone formed around them. The axis of the shaft of the femur was directed almost horizontally forwards and inwards, and the lesser trochanter rested on a small, hard, and slightly elevated surface of bone at the posterior border of the acetabulum. The acetabulum is reduced to a small shallow triangular cavity, the reduction of size being the consequence chiefly of the thickening of its posterior wall. All the bones are thin and light; but they are hard, and there is no appearance of the disease having been in progress at the time of death.

*From the Museum of Joshua Brookes, Esq.*

3324. The bones of the left hip-joint of a young person. The head and a part of the neck of the femur have been destroyed by deep and irregular ulceration; their surface now exposed is in part cancellous, and in part hard and nodulated. The acetabulum has been similarly ulcerated, and is enlarged; it is perforated through its inner and posterior walls, and its cavity is nearly filled with bone, whose texture is hard and cancellous, and which is firmly attached to its inner wall. There has been remarkable atrophy of the ischium and os pubis. The rough surface of the head of the femur appears to have been closely adapted to that of the bone in the acetabulum, but is not united to it. *Hunterian.*

3325. An os innominatum and a right femur, closely united by bone at the hip-joint. The head of the femur and part of its neck were destroyed by irregular ulceration, and their remains were drawn forwards and upwards to the anterior part of the acetabulum, with which they are united, both by the coalescence of their own tissues and by portions of new bone attaching their adjacent external surfaces. The shaft of the femur is directed almost horizontally forwards and inwards. *Hunterian.*

3326. The bones of a hip-joint. The head and part of the neck of the femur are removed by ulceration, and the remaining surface of the neck is firmly united by bone to the upper part of the acetabulum. The

acetabulum is much reduced in depth, and new bone has been formed on many parts adjacent to it. The tissue of the bones is strong and heavy, but they are reduced in size.

*From the Museum of Robert Liston, Esq.*

3327. An os innominatum and a femur, closely and smoothly united by bone at the hip-joint. The femur is directed almost straight forwards, but the form of that part of it which is not enclosed in the acetabulum is little altered. The border of the acetabulum has grown out over the base of the head of the femur, but its notch is preserved, a plate of bone united to the femur replacing that portion of the cotyloid ligament which extends across the notch. A section through the ilium, and the head and neck of the femur, shows that the substance of the acetabulum and that of the head of the femur have so completely coalesced, that their original outlines can be nowhere traced.

*Hunterian.*

- 3327A. Part of an os innominatum. The acetabulum is reduced in depth, and its circumference is diminished, by a great accumulation of new bone upon and by the sides of its posterior border. The surface of the new bone is slightly concave, and part of it, on which probably the dislocated head of the femur rested, is smooth. The adjacent bone is healthy.

*Presented by Sir William Blizard.*

3328. The upper part of a right femur, the head of which is diminished in size, flattened, and in parts ulcerated. Its whole texture is very light and dry.

*Hunterian.*

3329. A similar specimen.

*Hunterian.*

3330. A similar specimen, except that the base of the head of the femur is enlarged by the accumulation of bone around its border, and that the flattened articular surface which, in the preceding specimens, is nearly covered with a thin layer of compact bone, is in this superficially ulcerated.

*Hunterian.*

3331. The upper part of a right femur, of which, in disease of the hip-joint, the whole of the head has been destroyed, and the greater part of the neck reduced to less than an inch in thickness. The surface of the neck is healthy, but there is a deep ulcerated cavity in the front and upper part of the great trochanter. *Hunterian.*

### 3. *Chronic Rheumatic Disease of the Articular portions of Bones.*

3332. The bones of a right hip-joint. The acetabulum is much increased in depth by an accumulation of new bone upon the whole of its border, and especially upon its lower part, where a kind of ridge, shallow and grooved, is formed, and served as a support for the base of the head of the femur. A portion of the cotyloid ligament which is preserved shows that this accumulation of bone has taken place external to it, not in its substance. Part of the articular cartilage of the acetabulum has been removed; that covering its upper third remains, and appears healthy. The exposed surface of the rest of the bone is hard, in most parts compact, in some polished, but in all parts perforated by numerous minute round apertures, that make it look like worm-eaten wood. Bone deposited on each side of the groove over which the tendon of the psoas muscle passed formed a deep channel for it. New bone is also formed in the situation of the ligaments closing in the notch of the acetabulum. The head of the femur is flattened and conical, as if a portion of its upper surface had been removed; its base is greatly enlarged by an accumulation of new bone around it, especially at the lower and back part, where a ridge is formed corresponding with that already described as projecting from the lower border of the acetabulum. The articular cartilage remains on the part of the head which corresponded with that portion of the acetabulum on which also the cartilage remains: the rest of the surface of the head is hard, and in part polished, but perforated with numerous minute holes.

*From the Museum of Robert Liston, Esq.*



3333. Part of an os innominatum, in which the acetabulum is almost exactly like that in the specimen last described. *Hunterian.*

3334. The half of a pelvis, with the upper part of the corresponding femur. The cavity of the acetabulum is nearly filled-up by a mass of nodulated hard bone, which appears to have grown from its base. In the upper and posterior part, the surface of this new bone is very compact, polished, and perforated; and there is a similar polished surface of small extent on a large mass of new bone fixed to the lower part of the acetabulum. On these surfaces the head of the femur was in contact with the acetabulum. The head of the femur is much altered in form; its base is enlarged, and its diameter, from above downwards, is nearly twice as great as is usual, so that in profile it is nearly elliptical. At the posterior part of the head, near its base, is an oval, polished, and perforated surface, corresponding with that on the upper part of the acetabulum on which it moved. The rest of the surface of the head, comprising two-thirds of the whole, was entirely outside the acetabulum, and looked straight forwards, so that the foot must have been extremely everted. This part of the head is rough, in some parts soft and granulated, in others ulcerated and broken. On the posterior part of the neck of the femur, and of the lesser trochanter, there is a circumscribed elevated deposit of new bone, nodulated at its borders, and polished on a part of its convex surface, which corresponded with and moved upon the polished surface of the bone, filling up the lower part of the acetabulum.

*From the Museum of Joshua Brookes, Esq.*

3335. A femur, in which, after the removal of the articular cartilage (probably in chronic rheumatism), a large portion of the head acquired a hard, polished, and finely perforated surface. There is a rough elevation of bone in the place of the usual depression for the ligamentum teres; and a large quantity of new bone has been formed upon the neck of the femur, especially upon its anterior and inferior surfaces. There is an appearance of a well-united fracture just below the middle of the shaft, and a broad spiculum extends horizontally from this part of the bone.

3336. A femur, in which there has been a formation of bone, like that in the preceding specimen, upon the anterior surface of the neck and around the base of the head. The neck forms hardly more than a right angle with the shaft.
3337. A scapula and clavicle, the corresponding articular surfaces of which are enlarged, rough, and perforated with numerous small round apertures. A border of new bone is formed in hard nodules around the margins of the joint, and around the border of the glenoid cavity. *Hunterian.*
3338. The opposite clavicle of the same person, similarly and symmetrically diseased at its scapular extremity. *Hunterian.*
3339. The lower end of a femur, and a patella. Part of the outer condyle of the femur, after the removal of its cartilage, has acquired a hard, porcelain-like, polished, and vertically grooved surface. There is a corresponding surface on the patella; and the borders of the articular portions of both bones are surrounded with thin nodulated ridges of hard new bone, which were accurately adapted to each other. A considerable formation of new bone has also taken place on the back of the shaft of the femur. *From the Museum of John Heaviside, Esq.*
3340. The right humerus of a lion. The outer half of its inferior articular surface, after the removal of its cartilage, has been partially ulcerated, and presents a hard polished surface, grooved and perforated with numerous apertures, like those in worm-eaten wood. New bone is formed in small, rough, and hard prominences around the borders of the articulation, and on some of the ridges of the shaft. *Hunterian.*
3341. The left humerus of the same lion, similarly and symmetrically diseased. *Hunterian.*
3342. The right radius and ulna of the same lion. Nearly all the articular surface of the ulna is covered with hard polished bone, perforated like

that on the outer or radial portion of the articular surface of the humerus. The borders of the upper part of the ulna and of the radius, as well as some of the ridges on their shafts, are covered with nodules of new bone. The articular surface of the radius is nearly healthy. The other ulna, symmetrically diseased, is preserved in No. 626, and described in vol. ii., p. 111. *Hunterian.*

4. *Loose Bodies in Joints.*

3343. The bones of an hip-joint, with a mass of cartilaginous and bone-like substance, which lay loose in the cavity of the joint. The mass (which is now artificially fixed to the head of the femur) has an irregularly oval form; it is convex on one surface and concave on the other, in adaptation to the head of the femur; it measures two inches in its chief diameter, and is coarsely granulated on its surface. The head of the femur is expanded at its base, flattened, rough, and nodulated; the neck is shortened, and the upper margin of the head is half an inch below the level of the top of the trochanter.

*From the Museum of Sir A. P. Cooper.*

5. *Osseous Anchylosis of Joints.*

5 a. *In the Bones of the Upper Extremity.*

3344. The bones of an elbow-joint, so closely and smoothly united by bone, that only traces of the forms of their articular surfaces can be discerned.

*Presented by Sir William Blizard.*

3345. A left humerus and ulna, firmly and closely united by bone. They are united at a right angle: the form of their articular extremities is scarcely

altered; their surfaces are become smoothly continuous, so that their original outlines can hardly be discerned.

3346. A right humerus and ulna, closely and smoothly united by bone, but presenting more distinct traces of their original shapes. They form an angle of about  $145^{\circ}$ . The lower end of the humerus is narrowed, and presents, in front and on its outer side, a deep oval cavity, in which probably the head of the radius was lodged.

3347. A left humerus and ulna, apparently from the same person as the preceding, diseased in exactly the same manner.

3348. A left humerus and ulna, of which the corresponding articular extremities are closely and smoothly united by bone. Their axes form an angle of  $120^{\circ}$ . They are both, as well as the shafts of the bones, diminished in size; and the outer condyle of the humerus is reduced to a narrow cylindrical projection. There is also a deep ulcer in the great tuberosity of the humerus; and the shaft of the ulna is unnaturally curved.

*Hunterian.*

3349. A right humerus, radius, and ulna, firmly and smoothly united by bone. The upper part of the radius has lost its original shape, is smooth and flat, and measures about an inch in its vertical diameter, and less than half an inch in thickness. It is continuous, by smooth uninterrupted surfaces, with the front and lower part of the humerus, which is nearly as much reduced in breadth, so that the two together appear to form a single bone, laterally flattened, and bent to a right angle at the elbow-joint. There are imperfect traces of the condyles of the humerus. To that which represents the inner condyle the ulna is closely united, and its shaft is extended in a line parallel with and directly below that of the radius. All the bones are reduced in size, but their tissue is firm and healthy.

*Hunterian.*

3350. A radius, carpus, and metacarpus. Their articular surfaces are all

closely and smoothly united, so that in the place of the wrist-joint there appears but one continuous mass of bone. The hand is in the position of extreme extension and abduction.

*From the Museum of Robert Liston, Esq.*

3351. The lower end of the left radius, with the carpal and metacarpal bones, of a horse. There is an accumulation of hard irregular masses of new bone about the carpus, and upon the corresponding ends of the radius and metacarpal bone. Three of the carpal bones are firmly ankylosed to the radius, and the remainder to the metacarpal bone: the surfaces by which the carpal bones articulated with each other are healthy. *Hunterian.*

3352. The upper part of the right metacarpal bone of a horse, surrounded by nodulated hard new bone at its articular extremity, and firmly united with the bones of the tarsus. The chief bond of union appears to have been formed by the coalition of the growths of new bone extending from the several bones over the margins of the joint. *Hunterian.*

3353. The left metacarpal bone of an ox, with the first phalanges and sesamoid bones. They are all firmly united together by new bone, formed around and between their adjacent articular surfaces. Most of the new bone, which is formed external to the joints, is in smooth hard plates, extending from one bone to the other and fixed to both. *Hunterian.*

5 b. *Osseous Ankylosis of the Bones of the Pelvis and Lower Extremity.*

3354. A male pelvis, in which both the sacro-iliac symphyses are completely and smoothly united by bone. The union appears to be through the whole extent of the joints; and there is scarcely any accumulation of bone upon their borders. The pelvis is, in other respects, well formed, but its bones are light. *Hunterian.*

3355. An os innominatum and an os sacrum, united by a smooth plate of bone extending across the anterior part of their symphysis. *Hunterian.*

3355A. The bones of the knee-joint of a child. The patella is united by bone to the adjacent surfaces of both condyles of the femur, and new bone has been formed on its anterior surface. There is an extensive ulceration in the anterior part of the condyle, but the rest of the articular surfaces of both the femur and the tibia appear healthy. The tissue of the bone is very light and dry. *From the Museum of Joshua Brookes, Esq.*

3356. A femur and tibia, whose articular surfaces, after superficial ulceration, are firmly united by bone. They are fixed at an angle of about  $150^{\circ}$ , and within this angle, in the popliteal space, a strong portion of new bone passes almost vertically from the posterior surface of the outer condyle of the former to the top of the tibia, binding the bones together, and affording additional support to the femur. There is no lateral displacement of the bones. *Hunterian.*

3357. A femur and tibia, closely united by bone at the knee-joint. A section exhibits the complete continuity of both their cancellous tissue and their walls. The upper part of the tibia is much enlarged, and appears to have been the seat of necrosis. The bones are fixed at an angle of about  $150^{\circ}$ , and the tibia is drawn backwards; but they are not laterally displaced. *Hunterian.*

3358. Vertical sections of a femur and tibia, closely united by bone, at an angle of about  $120^{\circ}$ . The femur has been drawn inwards, and the tibia backwards. Both bones are flattened from side to side, and otherwise misshapen; their walls also are thickened, and more than usually compact. *Hunterian.*

3359. The corresponding ends of a femur, tibia, and fibula, united by bone so closely, that their cancellous tissues are continuous. The lower part of the femur is expanded and flattened anteriorly: the patella seems to have



been broken from the outer condyle, to which it was probably ankylosed. The femur and tibia are united at an angle of about  $100^{\circ}$ , within which a strong round portion of bone connects their posterior surfaces.

A piece of a knife remains in the lower part of the external condyle, into which it was driven and broken during the infancy of the patient. It remained there to his death, in adult age, producing probably the disease which ended in ankylosis; nor could it now be pulled out without destroying the bone, which is firmly adherent to it, and appears healthy in its structure. The specimen is engraved in Cheselden's 'Osteographia.'

*Presented by William Long, Esq.*

3360. A tibia and fibula, with the bones of the tarsus, all of which, retaining their natural forms and relative positions, are firmly united, both by the coalition of their tissue, and by portions of bone, arranged in fasciculated layers like ossified ligaments, and adapted to them externally. A fracture of the lower part of the tibia and fibula is united with slight displacement. New bone has been formed over nearly all the shaft of the tibia.

*Hunterian.*

3361. A similar specimen, with the addition of ankylosis between the tarsus and metatarsus. The changes were probably the result of long-continued want of motion, and of the inflammation excited by necrosis or ulceration of portions of the cancellous tissue of the lower end of the tibia, and of parts of the cuneiform bones.

*Hunterian.*

3362. Vertical sections of a tibia, fibula, astragalus, os calcis, and os naviculare, all of which, after superficial ulceration of their several articular surfaces, are united by bone closely and without displacement. The axis of the foot is directed obliquely downwards. The outline of each articular surface is preserved; the texture of all the bones is light and greasy.

*Hunterian.*

3363. A right astragalus and os calcis, firmly and smoothly united by a thin smooth plate of bone laid over the inner margin of their anterior and inner articulation.

*Hunterian.*

3364. The left astragalus and os calcis of the same person, united in exactly the same manner. *Hunterian.*

3365. A cuneiform and metatarsal bone, united by a strong band of osseous substance passing from the lower border of one to that of the other. The rest of their articular surfaces appears healthy. *Hunterian.*

3366. The bones of the tarsus and metatarsus of a horse, closely united by bone deposited between and in small quantity around their articular surfaces. *Presented by Sir Philip Egerton.*

3367. The skeleton of a man, thirty-nine years of age, with numerous osseous growths, of various dimensions and extent. Some of these are like osseous tumours; others, passing from one part of the skeleton to another, have produced ankylosis of many of the joints. The growths like tumours may be observed on the os frontis, mastoid process, and occiput, and in other parts of the skeleton where muscles are inserted; as, near the angle of the lower jaw, where the masseter is inserted; at the extremities of the spines of the vertebræ; at the coronoid processes of the ulnæ; in the femur, at the part where the glutæus maximus is implanted, &c. The second and more extensive kind of ossifications have in general followed the course of the larger muscles, and may be seen, on the right side, in the situation of the deltoid, joining the clavicle and acromion of the scapula to the humerus; in the situation of the supra-spinatus; and passing from the inferior angle of the scapula to the humerus, in the situation of the teres major and latissimus dorsi. On the back, more extensive ossifications of the muscles appear, which affix the scapulæ on both sides to the sacrum and ilium, and to the spines of the lumbar and dorsal vertebræ. On the left scapula the ossification of the teres major has not extended quite to the humerus, but the dorsum presents a singular process or ossification, with smooth sides, and a flattened overhanging margin, like an auxiliary or second spine. From the pelvis, ossifications extend from the sacrum and ilium in the direction of the glutæus magnus, and from the tuber ischii and os pubis, in the course of the biceps and

triceps adductor muscles. These extend to the right femur. Ossifications of the tendinous and ligamentous parts appear to be still more common, producing ankylosis of the vertebræ, of the left elbow-joint, of the tibia and fibula to each other on both sides, of the ankle-joints, and general consolidation of the bones of the tarsi. *Hunterian.*

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# SERIES LXVI.—DISEASES OF THE VERTEBRAL COLUMN.\*

## 1. *Formation of New Bone on the Vertebræ.*

3367A. The second and four following cervical vertebræ of a feline animal, on the arches of which a large quantity of new bone has been formed. The new bone has grown chiefly on the left side, and on the upper vertebræ, in broad and long plates of light, porous, and brittle texture, like that on the scapula and humerus of, perhaps, the same animal in Nos. 575 and 3032A. These plates pass backwards by the sides of the spinous processes, overlapping the arches of the next following vertebræ. The plates from these veral vertebræ have not coalesced, though they are placed closely one over the other; the movements of the vertebræ were therefore not prevented. *Hunterian.*

3368. Four cervical vertebræ. Ridges of bone have been formed on adjacent parts of the front and sides of their bodies, and on some of the articular processes. These ridges are nodulated, like those formed round the articular borders of bones in chronic rheumatism. Those on adjacent vertebræ are very near one another, but no union has taken place between them. *Hunterian.*

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\* Corresponding with Series XIV., vol. ii., p. 242.

3369. Eight of the lower dorsal vertebræ of a lion. New bone has been formed in ridges on the anterior surfaces, and the upper and lower borders of their bodies. The ridges on the borders have grown with crenated edges towards each other over the intervertebral spaces, and are nearly in contact, but they have in no instance coalesced. There are also irregular nodulated and hard osseous deposits on some of the articular processes. *Hunterian.*

3370. Two dorsal vertebræ of a lion, which, by the further progress and coalition of the growths of bone, like those in the last described specimen, are united by their adjacent anterior borders, and present deep coarsely-nodulated ridges of bone, which overlapped the front of the vertebræ next above and below them. Similar ridges of nodulated bone are formed around the borders of the articular processes; and their articular surfaces, as well as those of the bodies, are in parts hardened, and in parts perforated by ulceration, in exactly the same manner as the lion's ulnæ in Nos. 626 and 3342, which are placed with the specimens of chronic rheumatic disease. *Hunterian.*

3371. A first lumbar and six lower dorsal vertebræ, from the anterior borders of which, both above and below, and chiefly in the middle line, flat and smooth processes of bone have grown out, like sharp-edged ridges, and have met, but have not coalesced, in front of the intervertebral spaces. Continuous with these ridges, new bone has been formed on the front surfaces of the bodies of the vertebræ, each of which is covered with a smooth hard layer of bone, nearly equal in width to the ridges which project from the adjacent borders. The spine is not distorted. *Hunterian.*

3372. Six lower dorsal vertebræ, the bodies of which are firmly united by the coalition of laminar growths of bone (like those last described) extending over one or both sides of their borders and surfaces. The spine is not distorted, nor are the intervertebral spaces diminished in depth beneath the uniting growths of bone; but the anterior and other parts of the

margins of the bodies of the vertebræ which are not covered by the plates of bone are thickened and nodulated. *Hunterian.*

3373. The lower half of the dorsal and the upper half of the lumbar portion of a vertebral column. All the dorsal vertebræ are united by bone, in the same manner as in the preceding specimens. On the adjacent borders of the last dorsal and the first lumbar vertebræ, the bone has been formed in the same manner as on the others, but the two portions have not coalesced. *Presented by Sir William Blizard.*

3374. Two cervical vertebræ, the bodies of which are united by the coalition of similar ridges of bone deposited on the adjacent parts of their anterior borders. Their other borders are thickened and nodulated. *Hunterian.*

3375. Vertical sections of two cervical vertebræ, similarly united. They show that the bond of union is confined to the exterior of the vertebræ, as if a bridge of new bone passed from the surface of one to that of the other over the intervertebral substance. All their own tissue is healthy, except in that the other borders of their bodies, and parts of the articular processes, are nodulated. *Hunterian.*

3376. Five lower dorsal vertebræ, the bodies of three of which are firmly united by similar growths of bone over their surfaces and borders on the left side. There are similar growths on the other two vertebræ, but they have not yet coalesced with those above and below them. The spine is slightly curved towards the right side, in consequence of the approximation of the left borders of the vertebræ. The borders of the left articular processes of the lowest two vertebræ are enlarged and nodulated, and there are thin ridges of new bone on the upper margins of their arches. *Hunterian.*

3377. Four dorsal vertebræ, the bodies of which are similarly united. The chief growths of bone are on the left surfaces and borders of the vertebræ, and there is a slight curvature towards the right side. There are also

thin layers of fasciculated bone uniting the arches of the vertebræ, in the situation of the ligamenta subflava, like which ligaments also these plates of bone have large apertures in the middle line. *Hunterian.*

3378. Two lumbar vertebræ, similarly united by a broad thin plate of bone attached to the adjacent left borders of their bodies, and also by new bone formed between and smoothly uniting their spines, arches, and articular processes. *Hunterian.*

3379. Four dorsal vertebræ, the bodies of which, on the right side, are united by a thin layer of bone formed upon their surfaces, and extending over the intervertebral spaces. Three ribs on the right side are immoveably united to the spine by a continuation of this layer of new bone, and on the left side two ribs are united by thin processes to the bodies of the adjacent vertebræ. The intervertebral spaces are narrow, but there is no distortion of the spine. *Hunterian.*

3380. A vertebral column, with parts of the ribs. Nearly all the vertebræ have ridges of bone, in the form of plates and nodules, on their adjacent borders, and many of these plates, growing towards each other, have united in front of the intervertebral substance. The seventh, eighth, and ninth dorsal vertebræ are thus united by a large flat and smooth plate of bone, which covers part of their anterior surfaces as well as their bodies, and has nearly united with similar growths on the bodies of the sixth and tenth dorsal vertebræ. The last cervical and first dorsal, the tenth and eleventh dorsal, and the second and third lumbar vertebræ, are similarly united by separate large plates of bone. All these plates are situated at the sides of the bodies of the vertebræ, some on the right side, some on the left. There is no distortion of the spine. Several of the lower ribs have been broken and re-united. *Hunterian.*

3380A. A vertebral column and pelvis, with many of the ribs. By the extension of such disease as is shown in the preceding, all the vertebræ are united together, and all the ribs with them, by plates of bone extending



over all their articulations. The ilia are, in the same manner, and with almost complete ossification of the sacro-iliac symphyses, united to the sacrum. So extensive and complete is this ossification, that the spine has the appearance, externally, of a nearly solid column of bone, with continuous branches extending outwards in the ribs. In only a few parts of the dorsal and lumbar regions there remain spaces in the position of the intervertebral ligaments; and only in the upper cervical and lower lumbar regions are there any apertures where the ligamenta subflava were. The intervertebral foramina are of natural size. The spine has lost the natural anterior curves of the cervical and lumbar regions, but is not in other respects deformed. *Purchased, 1847.*

3381. Two lumbar vertebræ of a white bear, united, like the preceding specimens from the human spine, by a broad thin plate of bone attached to the lower and lateral surfaces of their bodies, and extending, like a bridge, across the intervertebral space. There is a small similar deposit on each of the transverse processes of one of the vertebræ. *Hunterian.*
3382. Two lumbar vertebræ of a horse, similarly united by a plate of bone attached to the adjacent surfaces of their bodies on the right side, and forming a considerable projection over the side of the intervertebral space. *Hunterian.*
3383. Six dorsal vertebræ of a horse. The bodies of five of them are united by new bone, which probably had its origin in growths like those already described, but now forms a continuous, thick, and smooth plate, investing nearly the whole surfaces of all the bodies, and covering-in the intervertebral spaces, so that the outlines of the several vertebræ can hardly be discerned. On the sixth vertebra similar deposits of new bone had taken place, but had not coalesced with those on the vertebræ above and below it: they serve to show that the growths are produced only on the surfaces of the bodies, whose interior structure is unaffected by them. Similar and extensive formations of new bone have taken place on the arches and between the spinous processes of some of the adjacent ver-

tebræ, uniting them immoveably together. There is no distortion of the spine.

*Hunterian.*

3384. A vertical section of five dorsal vertebræ of a horse, the bodies and some of the arches and spinous processes of which are united in the same manner as those in the preceding specimen. The tissue of the new plate of bone has coalesced with parts only of the surfaces of the bodies, and not with the borders of them all, and it does not in any degree encroach upon the intervertebral spaces, or implicate the internal structure of the vertebræ.

*Hunterian.*

3385. Nine dorsal vertebræ of a horse, of which, as in the two preceding, the bodies are all united by plates of bone covering their borders and surfaces. Several of the spinous and articular processes are similarly united by plates and irregular masses of bone.

*Presented by Sir William Blizard.*

3386. Seven lumbar and caudal vertebræ of a horse, similarly diseased.

*Presented by Sir William Blizard.*

3387. All the cervical and the first four dorsal vertebræ of a lion, similarly united by broad and very thick plates of bone, irregularly formed upon the sides and lower surfaces of their bodies. Many similar plates pass from the body of one vertebra to the transverse process of another, so that, viewed from below, scarcely any of the original structures of the spine can be discerned, but in their place an irregular, but nearly continuous, series of smooth plates and rounded masses of new bone. The upper part of the spine is a little drawn to the right side, on which the chief deposit of new bone has taken place.

*Hunterian.*

3388. Three of the cervical vertebræ of an ostrich, on several parts of which irregular plates and large masses of bone have been formed, as in the preceding specimens, and have united them immoveably together.

*Hunterian.*

3389. Two cervical vertebræ of the same bird, similarly diseased and united.

*Hunterian.*

3390. Two of the lower cervical vertebræ of the same bird, similarly united by a large mass of new bone on the right side and under surface of the adjacent parts of their bodies. There are similar but smaller deposits on the arches and other parts of the vertebræ, and their growth has produced some degree of distortion.

*Hunterian.*

3391. A dorsal vertebra of the same bird, with the head of a rib which was fractured and united by bone.

*Hunterian*

2. *Anchylosis of Vertebræ, in consequence of disease of their Articular Surfaces.*

3392. Part of the base of a skull, with the atlas, which is in several places united to it by bone. A part of the left side of the arch of the atlas is deficient, probably from ulceration.

*Hunterian.*

3393. A second and a third cervical vertebræ, the corresponding articular processes of which, on the left sides, are united by bone. There is also some formation of new bone around the borders of the same processes on the right side. Their bodies are not displaced or diseased.

*Hunterian.*

3394. A second and a third cervical vertebræ, of which all the adjacent parts are smoothly united by bone, without displacement.

*Hunterian.*

3395. Vertical sections of a second and third cervical vertebræ, the bodies of which are united by a continuity of bone over a great part of their circumference, so that the centre only of the intervertebral space remains. The arches are similarly united; the right side of that of the third vertebra is nearly deficient.

*Hunterian.*

3396. Vertical sections of the fourth and fifth cervical vertebræ of probably the

same spine as that from which the last described were taken. The posterior halves of their bodies are similarly united by cancellous bone. Their anterior margins, also, are in part united. *Hunterian.*

3397. A sacrum and last lumbar vertebra. The left transverse process of the vertebra and the upper part of the ala of the sacrum are closely and smoothly united by bone, without distortion. *Hunterian.*

3398. A similar specimen, except that the union has taken place on the right side, and is rather less complete. *Hunterian.*

### 3. *Ulceration of Vertebrae.*

3399. The two lower dorsal, and all the lumbar, vertebrae of a young person. Their tissue is very light, dry, and spongy, and there are scarcely any remains of the compact layer which should cover their surfaces. The greater part of the left side of the arch, spinous process, and inferior articular process of the second lumbar vertebra has been destroyed by ulceration, and there are such deposits of new bone on the sides of the bodies of the adjacent vertebrae, as make it probable that there was a lumbar abscess. *Hunterian.*

3400. Three lumbar vertebrae, the bodies of which have been irregularly ulcerated, and are covered and united by deposits of new bone. The surfaces of the ulcerated parts are smoothly rounded, formed of healthy cancellous bone, and, in general characters, are like those of tuberculous cavities in bone. *Hunterian.*

3401. Three lumbar vertebrae and a sacrum. The anterior parts of the bodies of the two lower vertebrae have been superficially ulcerated, and new bone is formed upon them around the ulcerated surface. *Hunterian.*

3402. A similar specimen. *Hunterian.*

3403. The last two lumbar vertebræ and the sacrum of a young person. A large portion of the upper and left part of the sacrum has been destroyed by ulceration. *Hunterian.*

3404. Four lumbar vertebræ, with the pelvis of a young person. The body of the last lumbar vertebra is almost entirely destroyed by ulceration; those of the third and fourth are very deeply ulcerated, and there has been superficial ulceration of the whole of the front of the sacrum. There is no disease of the ilia, or of the sacro-iliac articulations.

It is probable that in this case there was a lumbar abscess, which passed down behind the rectum.

*Hunterian.*

3405. Two lumbar vertebræ, united by growths of bone between and around their bodies. The anterior part of the body of one has been superficially, that of the other deeply, ulcerated; but the appearance both of those parts and of the new bone, the surface of which is hard and smooth, indicates that the ulceration was not in progress. *Hunterian.*

3406. The second, third, sixth, and seventh cervical vertebræ of an adult. The body and odontoid process of the second are irregularly, and in some parts deeply, ulcerated; the right superior articular surface is destroyed; and the arch is thickened and made uneven by deposits of new bone. Both the ulcerated surfaces and the new bone are hardened, as if the diseased parts had healed. The other vertebræ have points and plates of hard and heavy new bone around their borders; and the corresponding surfaces of the bodies of the sixth and seventh are ulcerated.

#### 4. *Distortions of the Vertebral Column.*

##### 4 a. *Lateral Curvature.*

3407. An adult vertebral column, in the superior dorsal portion of which there is a slight lateral curvature, the convexity of which is to the left. A

compensating curve, bringing the top of the sacrum into the same median vertical plane as the upper cervical vertebræ, extends from the middle of the dorsal region to the third lumbar vertebra, and is only just perceptible. The bodies of the vertebræ, and the intervertebral substances, are reduced in depth on the side next the concavity of each curve, and the articular processes on the same side are turned a little forwards by the rotation or torsion of the vertebræ; but their tissues appear healthy. *Hunterian.*

3408. An adult vertebral column, in the superior dorsal portion of which there is a more considerable curvature to the right. Both the lumbar and the superior dorsal portions are, in compensation, slightly curved to the left. The bodies of the vertebræ are somewhat rotated; the left articular processes of those affected by the chief dorsal curve are turned forwards, and the right articular processes of the lumbar and superior dorsal vertebræ backwards; so that, in both cases, that side of the vertebra which lies in the concavity of the curve is turned forwards. The grooves by the sides of the spinous processes are all narrower on the right than on the left side. Many of the vertebræ are slightly thickened and nodulated at the margins of their bodies and articular processes; and the *grain* of the texture of the bodies of those which are engaged in the chief curvature is oblique in the direction of, and in adaptation to, the curve. *Hunterian.*

3409. A natural skeleton of the trunk of an adult female. The dorsal portion of the spine is much curved, with its convexity directed to the right, and with slight rotation of the bodies of the vertebræ, their left articular processes being turned forwards. A curve exists in the opposite direction in the lumbar portion of the spine. The bodies of the vertebræ, and the intervertebral spaces, are reduced in depth, and their margins are very prominent on the side directed to the concavity of each curve; but their texture does not appear altered. The spinous processes of the vertebræ engaged in the upper curve (that to the right) are directed rather to the right; those of the vertebræ in the lower or leftward curve to the left: hence in both cases the spaces between the spinous and transverse processes of the vertebræ are narrower on the convexity than in the



concavity of the curves. The ribs are all approximated; the angles of those of the right side, towards which the dorsal part of the spine is curved, are less obtuse than is natural, and this side of the chest is much contracted. But on the left side, the angles of the ribs are unusually obtuse, and the capacity of this side of the chest is enlarged, at least in its lateral dimensions, nearly enough to compensate for the contraction of the other side. The pelvis is healthy. *Hunterian.*

3410. An adult vertebral column, with a sudden curvature directed to the right in the inferior dorsal region, but with scarcely any curvature in the opposite direction in the parts above and below. The curve includes the fourth dorsal, second lumbar, and all the intervening vertebræ; their bodies are reduced in depth on the left side, and rotated, so that their left articular processes are turned almost straight forwards. The angles of the left ribs, and especially of those that are attached to the vertebræ in the middle of the convexity of the curve, are much less obtuse than usual; their shafts also are directed very obliquely downwards, and some of them are within half an inch of the vertebræ: the angles of the right ribs, especially of those connected with the vertebræ in the middle of the concavity of the curve, are very obtuse, and almost obliterated; and their shafts are directed nearly horizontally outwards, enlarging this side of the chest in compensation for the contraction of its right side.

3411. An adult vertebral column, with the bones of the chest. There is a slight curvature to the right, extending from the sixth dorsal to the third lumbar vertebra, and a very slight curvature in the opposite direction in the parts above and below. Plates or ridges of new bone have been formed on the borders of the bodies of the lower dorsal and the lumbar vertebræ, and have thus united some of them. The chief growths of new bone are on those sides of the bodies which lie in the concavities of the curves.

3412. Four lumbar vertebræ, of which the corresponding articular processes on the right side are united, with a considerable accumulation of bone upon

them and the adjacent parts. The arches, and two of the articular processes on the left side, are similarly united. The spine is much curved, with its concavity turned to the right side, but with little or no twisting of the bodies of the vertebræ. *Hunterian.*

3413. Three dorsal vertebræ, the articular processes and arches of which are united on the right side, like those in the last specimen. There is also a similar curvature of this part of the spine without twisting. *Hunterian.*

3414. The last cervical and eleven of the dorsal vertebræ of a very distorted spine. The chief distortion is in the six lower dorsal vertebræ, which form a curve, the convexity of which is directed backwards and to the right side. Those surfaces of their bodies which were turned forwards are now turned straight outwards to the right; their spinous processes are turned, but in a less degree, to the same side; and the left, which are now the anterior, sides of the bodies of the vertebræ, are so diminished in depth, that in the concavity of the curve the distance between the lower borders of the sixth and eleventh dorsal vertebræ is hardly more than an inch. The articular surfaces, and the arches of nearly all these lower dorsal vertebræ, are immoveably united by bone, and so are the left sides of their bodies. The five upper dorsal and the seventh cervical vertebræ are less diseased: they present a curvature, of which the concavity is turned towards the right, but their bodies are scarcely at all rotated. The spinous and articular processes, and the left side of the bodies of the fourth and fifth cervical vertebræ, are united by bone. A part of the seventh rib on the right side is preserved; its head and neck are smoothly united by bone to the articular processes and bodies of the two adjacent vertebræ, and its shaft, as far as the angle, lies parallel with the side of the spine. The articular surfaces for the ribs of the left side are enlarged, especially those which are in the concavity of the inferior and chief curvature. *Hunterian.*

3415. Seven vertebræ, from the dorsal portion of a spine in which there was a very acute lateral curvature. The spaces between the vertebræ are, on

the convex side of the curve, increased in depth; of those on the concave side, three are much diminished in depth, and the others are nearly obliterated, the half-borders of the adjoining vertebræ having coalesced with a smooth band of new bone formed on them. The bodies of all the vertebræ are thinner and rather more compact on the concave than on the convex side of the curve, but they are not otherwise altered. The articular processes, and most of the laminæ on the concave side, are united by bone, and so are some of those on the convex side; but their texture, as well as that of the spinous processes, appears healthy. It may be observed that in this, as in many of the preceding cases, all the large blood-vessels which enter or leave the bodies of the vertebræ do so in the concavity of the curve.

*Presented by Sir William Blizard.*

3416. Part of a spine, with a lateral curvature extending through the whole dorsal region. The aorta is curved and tortuous in exact adaptation to the bodies of the vertebræ.

#### 4 b. *Posterior Curvature of the Vertebral Column.*

##### 4 b. 1. *With Arching.*

3417. The vertebral column and pelvis of an aged woman. From the second cervical vertebra to the top of the sacrum, the spine forms a single curve, the whole of which is more concave anteriorly than the natural dorsal curve usually is. When the pelvis is held in the position which it occupies in the erect posture of the healthy body, the second cervical vertebra of this spine stands eight inches in front of the symphysis pubis. New bone has been formed upon the borders of the bodies of nearly all the dorsal and lumbar vertebræ, and some of them are united by the new bone thus formed coalescing in front of the intervertebral spaces. The pelvis is healthy, and of natural dimensions.

*From the Museum of Robert Liston, Esq.*

3418. The dorsal, with parts of the lumbar and cervical, portions of a spine, which is considerably curved backwards, and in the upper dorsal portion is turned slightly to the right side. The left sides of the vertebræ are shallower than the right. Nearly all the dorsal intervertebral spaces are obliterated, or extremely narrow, and parts of the bodies of the five upper dorsal vertebræ have a continuous smooth surface.

These changes probably occurred in old age.

*Hunterian.*

4 b. 2. *Posterior Angular Curvature of the Vertebral Column.*

3419. Vertical sections of the natural skeleton of the trunk of a child. The bodies of the sixth and seventh dorsal vertebræ are wholly, and those of the fourth, fifth, and eighth are partially, destroyed by ulceration. The adjacent ribs were all separated from their connections, and some degree of angular curvature had been produced, by the approximation of the parts of the spine above and below the seat of disease, when the child died.

*Hunterian.*

3420. A natural skeleton of the trunk of a person about eighteen years old, divided by a vertical section through the spine and sternum. After almost complete destruction by ulceration of the bodies of the last five dorsal and the first lumbar vertebræ, the remaining parts have come together and united in one mass of apparently healthy cancellous tissue. There is a very acute angular curve, and a slight lateral distortion, in this region; but the spinal canal is not narrowed. The ribs are approximated, many of the intercostal spaces being only a quarter of an inch wide; the obtuseness of the angles of the ribs is diminished, and the sides of the chest are flattened, the shafts of the ribs being directed nearly straight forwards: the lower ribs are nearly in contact with the crests of the ilia.

*Hunterian.*

3421. The injected and dried heart and large blood-vessels of the person whose spine was last described. The aorta is twice bent into acute angles, in correspondence with the deformity of the spine; the vena cava inferior is more gently curved. Both of them are of natural diameter.

*Hunterian.*

3422. A natural skeleton of the trunk of an adult male. After nearly complete destruction by ulceration of the bodies of the sixth, seventh, and eighth dorsal vertebræ, and partial destruction of those of the fifth and ninth, the remains of the latter two have come together and firmly united. But they have united side by side, so that, together with a very acute angular curvature, there is a lateral displacement in the middle of the dorsal regions, and, in compensation for this, a gentle lateral curvature in the inferior dorsal and lumbar portions. The ribs are approximated, and of unusual length; they are all directed very obliquely downwards and forwards, in lines nearly parallel with the lower part of the spine, and their extremities reach below the crests of the ilia. The pelvis is healthy, and of natural dimensions; the tissue of its bones, and the development of the parts for the attachment of muscles, are such as indicate that there was no long-continued paralysis of the lower extremities, although the distortion of the spine must have existed for a considerable time.

*Presented by — Blood, Esq.*

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#### SERIES LXVII.—DISTORTION OF THE PELVIS.

3423. The lower part of a spine, with the pelvis and the upper portions of the thigh bones. The spine has a considerable curve towards the left side. The pelvis is distorted, and all its bones are small and light: its diameter from the promontory of the sacrum to the symphysis pubis is only two inches and a quarter; from the coccyx to the same symphysis, two inches

and a half: its greatest transverse diameter is five inches and two-thirds; its greatest oblique diameter four inches and a half. The head and neck of the left femur have been destroyed by ulceration; the left acetabulum is filled up with ligamentous tissue; and what remains of the shaft of the left femur indicates that it was long fixed in a posture of extreme flexion and adduction. The same posture is indicated by an accumulation of bone on the body of the os pubis, over which the femur rested. The right femur appears to have been similarly fixed, but the state of the right hip-joint cannot be discerned.

Distortions of the Pelvis in other parts of the Museum:—

Nos. 2879B, 2879C, 2880, 3489, 3489A.

## SERIES LXVIII.—INJURIES AND DISEASES OF TEETH.\*

### 1. *Lodgment of Foreign Bodies in Tusks.*

3424. An iron bullet enclosed in ivory the surface of which is beset with small spicula and nodules. This is such a case of ivory as forms around balls when they penetrate the pulp of the tusk. Had the tusk continued to grow, this ball, like many in the following specimens, would have become imbedded in the ivory gradually formed round it, in the gradual eburnation of the pulp; but the ivory would have remained distinguished by its yellow colour, and its less regular and looser texture.

*From the Leverian Museum.*

3425. Portion of the tusk of a young elephant, with a leaden musket-ball projecting into its pulp-cavity. The ball entered that part of the tusk which was within the alveolar cavity, and the hole by which it entered is

\* Corresponding with Series XV., vol. iii., p. 1.



completely closed externally by new bone, though not regularly enough to conceal its place of entrance. Where the ball projects into the pulp cavity, new ivory has been formed in a border round it, and has partially enclosed it. *Hunterian.*

3426. Section of the tusk of an elephant, in which a leaden bullet is imbedded. The ivory around it has not a natural appearance, but is closely united to the adjacent healthy ivory. Below the bullet, and between it and the exterior of the tusk, there is an irregular cavity, probably indicating a part of the track of the ball at which, in consequence of the death of the pulp, no new ivory was formed. *Hunterian.*

3427. Section of the tusk of an elephant, exhibiting a projection of imperfectly formed ivory at one part of the pulp-cavity. The imperfect ivory, in which probably a bullet is imbedded, is not closely united to the healthy ivory. *Hunterian.*

3428. Sections of the tusk of an elephant, close by the surface of which an iron bullet is imbedded. The hole at which the bullet entered is closed by an uneven layer of bone, and the bullet is imbedded in apparently healthy ivory. *Hunterian.*

3429. Section of the tusk of an elephant, in which an iron musket-ball is encased in a large quantity of imperfectly formed ivory. *Hunterian.*

3430. Two similar specimens. In one of them the imperfect ivory formed around the ball was so little connected to the healthy ivory, that over a large portion of its surface it has been smoothly separated, as if it had been enclosed in a distinct cavity. *Hunterian.*

3431. Sections of a similar specimen. *Hunterian.*

3432. Section of the tusk of an elephant, in the interior of which it is probable that a bullet is imbedded. Both the cut surfaces exhibit a large quantity

of imperfectly formed ivory, distinguishable by its yellowish colour, its uneven outline, and the absence of the regularity of texture seen in the adjacent healthy ivory. On the exterior of the tusk is a cavity indicating the spot at which the ball entered. *Hunterian.*

3433. Section of the tusk of an elephant, wounded by a bullet which passed through one of the walls of that part of the tusk which was within the alveolus, traversed the pulp, and was found in it nearly opposite the part at which it entered. The hole at which the ball entered the outer surface of the tusk is smoothly closed with new bone; and on the interior of the pulp cavity, where the ball entered, there is a large irregularly knobbed projecting mass of new ivory. *Hunterian.*

3434. Sections of part of a tusk in which an iron bullet is imbedded. The unhealthy ivory immediately surrounding the bullet is intimately united with the rest of the tusk. The external surface of the tusk, where the bullet penetrated, appears healthy, but on its inner surface there is a deep depression, something like that of a cicatrix, with narrow grooves radiating towards its centre. There are two other cavities in the tusk, the contents of which have been removed; they are both lined by membrane. [Both the sections are warped, and their surfaces hardly correspond.]

*Presented by Thomas Blizard, Esq.*

3435. The base of an elephant's tusk, irregularly shaped, and having numerous large conical processes and nodules of ivory growing from the walls of the pulp-cavity towards the jaw. A section of a cavity, in which a bullet was lodged, is shown, and much of the adjacent ivory has an unhealthy texture.

*Presented by Sir Thomas Stamford Raffles.*

## *2. Decay of Teeth, and Ulceration of their Alveoli.*

3436. Part of the upper jaw of a lion or tiger, from which several teeth have fallen, apparently in consequence of ulceration of their sockets and the alveolar margins. *Hunterian.*

3437. Part of a lower jaw, apparently from the same animal as the preceding, with extensive ulceration of the sockets of the canine teeth and their alveolar margins, and corresponding disease of the surface of the fangs of those teeth. *Hunterian.*

3438. Part of the lower jaw of a lion or tiger, with the fangs of two of its molar teeth extensively decayed. The adjacent alveolar margins of the jaw are on one side ulcerated, and on the other appear to have been unnaturally vascular. *Hunterian.*

### 3. *Deposits of Tartar upon Teeth.*

3439. Part of the bones of a face, with the last molar tooth on the right side of the upper jaw covered on its outer side with a large granulated deposit of tartar. *Hunterian.*

### 4. *Malformations of Teeth.*

3440. A short malformed elephant's tusk. Its surface is covered with irregular knobs and plates of rough unhealthy ivory; its central part appears more healthy. *Presented by Sir Thomas Stamford Raffles.*

3441. A similar specimen.

3442. A similar specimen.

3443. A similar specimen. The tusk has grown to a larger size, and is more irregular in its form, and more thickly covered with unhealthy ivory.

5. *Growths in the Dental Pulp.*

3444. A mass of ivory, found within the pulp-cavity of the tusk of an elephant. It has a nearly cylindrical form, pointed at its two extremities: it measures exactly five inches in length, and an inch and a half in diameter: on its surface there are several small nodules of ivory, irregularly scattered, but it is everywhere so smooth, that it could not have been adherent to the walls of the pulp-cavity. *Hunterian.*

3445. Three similar but much smaller growths of ivory, from the pulp-cavity of an elephant's tusk. One, a very slender cylindrical and branched portion, appears to have been loose; another, about five inches long, and half an inch in diameter, has been sawn across at one end, probably where it was attached to the wall of the pulp-cavity; and the other specimen exhibits several small nodules of ivory attached to the wall of the pulp-cavity by broad bases. *Hunterian.*

3446. A section from the base of the tusk of a walrus, with nodules of ivory in the pulp-cavity. The largest of them is loose; others are attached to the wall. *Hunterian.*

3447. A similar section, in which the distal portion of the pulp-cavity is filled with similar nodulated and granular ivory, adhering to its walls. *Hunterian.*

3448. A mass of the same kind, but much larger, covered with long thick spines and nodules of ivory. It is of an irregular crescentic form, and at one part measures ten inches in circumference.

*Presented by Thomas Chevalier, Esq.*

SERIES LXIX.—DISEASES OF THE INTESTINAL CANAL.\*

3449. Part of a colon, enormously enlarged, in consequence of a stricture of the rectum.

It was taken from a married woman, thirty years old. Six years before her death she had ascites, but recovered from it; and two years after had a child. Three years before her death her abdomen began to enlarge, and she supposed herself pregnant, for her menses ceased, her mammæ enlarged, and their areolæ became dark. The enlargement of the abdomen increased, till the integuments appeared ready to burst, and was often accompanied by great noise, as of air moving in the intestines. The bowels were very costive, being sometimes not moved more than once in a month, and resisting the action of purgatives. Fifteen months before her death she experienced great temporary relief from diarrhœa. After death, all the abdominal organs were found healthy, except the intestines, by which all the rest were displaced. The whole length of the intestinal canal was exceedingly distended with air and fæces. The arch of the colon was placed vertically; it was more than twenty inches in circumference, and would hold three gallons of water. The stricture of the rectum would not permit the passage of water in either direction.

*From the Museum of John Taunton, Esq.*

SERIES LXX.—HERNIA.†

3450. Part of a pelvis, with the right inguinal region, dried, and exhibiting the relations of a small oblique scrotal hernia. *Hunterian.*
3451. The sac of a scrotal hernia, distended and dried. *Hunterian.*
3452. A similar preparation, with the vas deferens injected with mercury. *Hunterian.*

\* Corresponding with Series XXIII., vol. iii., p. 67.

† Corresponding with Series XXV., vol. iii., p. 111.

3453. A similar preparation of a much smaller hernial sac.

*Hunterian.*

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SERIES LXXI.—DISEASES OF THE HEART.\*

3454. An healthy heart, dried, after the injection of its cavities and the great vessels.

*Hunterian.*

3455. An human heart, dried, after the injection of its cavities and the great vessels. All its cavities, but especially the auricles, are much larger than is natural; the vessels are of little more than the ordinary size.

*Hunterian.*

3456. An heart, dried, after the distension of its cavities. It appears to have been of natural size. In the line between the auricles and ventricles are a few thin plates of bone. Other plates of various forms exist on the walls of the ventricles and auricles; the largest of them covers nearly all the posterior wall of the right ventricle, and a large portion of that of the right auricle. There is also a large quantity of bone about the apex of the heart. All the bone has coarsely granulated surfaces, and the several portions have no regularity of shape or arrangement.

The specimen is engraved in Dr. Baillie's 'Illustrations of Morbid Anatomy,' Fascic. I., Pl. 5, and in the first volume of the 'Medical Communications,' London, 1784, Pl. 7, where also a history of the case is recorded by Dr. Samuel Foart Simmons, and an account of the dissection by Mr. Henry Watson.

The patient was a tall stout man, sixty-seven years old, and had enjoyed good health till six months before his death, when he began to suffer "pain constant and lancinating, extending from about the lower part of the œsophagus to the left side of his chest." With these he had other symptoms, which Dr. Simmons "did not hesitate to ascribe to a cancerous tumour or ulcer about the upper orifice of the stomach." "His pulse was languid, but about 100 strokes in a minute, and frequently intermitted."

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\* Corresponding with Series XXXIV., vol. iii., p. 182.



In the post-mortem examination a large ulcer of the œsophagus was found, which, much more than this disease of the heart, appears to have caused the patient's death. There was complete adhesion of the pericardium.

*From the Museum of John Heaviside, Esq.*

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SERIES LXXII.—DISEASES OF ARTERIES.\*

1. *Atheromatous and Earthy Deposits.*

3457. The injected and dried arch and thoracic portion of the aorta of a man, who had aneurisms of both popliteal arteries. The aorta is very slightly and irregularly dilated, and has small plates of earthy matter in its coats.

*Hunterian.*

3458. The rest of the aorta, and the iliac and femoral arteries of the same patient, similarly diseased, but in a very small degree.

It is probable that these two specimens are from the same patient as Nos. 1703-4-5.

*Hunterian.*

3459. The arch of an aorta with numerous deposits of earthy matter in its coats.

*Hunterian.*

3460. The large arteries of a man, fifty years old. All of them have earthy matter more or less copiously deposited in their coats. The femoral arteries and all their branches, which have been removed nearly as low as the ankles, are made rigid, and like tubes of bone, by close-set narrow rings and uneven plates of the earthy matter; and the brachial, radial, and ulnar arteries are in their whole length similarly and almost as much diseased. The disease prevails as extensively in the lower

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\* Corresponding with Series XXXV., vol. iii., p. 205.

part of the aorta, and in the trunks of the cœliac, mesenteric, and iliac arteries; but in the rest of the aorta the deposits of earthy matter are few and widely scattered. *From the Museum of Robert Liston, Esq.*

2. *Aneurisms and Dilatations of Arteries.*

3461. The arch of an aorta, generally and considerably dilated from near its origin to the giving-off of the left subclavian artery. Earthy matter is thickly deposited in its coats. *Hunterian.*
3462. The arch of an aorta, with parts of three left ribs. The first portion of the arch is dilated to more than twice its natural size; and an aneurism, formed by a large dilatation of its anterior wall, has come in contact with the partly ossified cartilages of the ribs. After producing the absorption of one rib and the displacement of the others, it has projected between them. *Hunterian.*
3463. Part of the front wall of a chest, with a large aneurism of the arch of the aorta. The aneurism arises from the front wall of the aorta, just below the origins of the brachio-cephalic trunks, and the whole of the extra-pericardial part of the arch is dilated to more than twice its ordinary size. The aneurism, projecting forwards, has produced absorption of the cartilages and osseous ends of the first two left ribs, and of the left margin of the sternum, and has extended far beyond the walls of the chest. *Hunterian.*
3464. Part of a chest, with a very large aneurism of the arch of the aorta. The aneurism arises from the front and right wall of the arch, just below the origin of the arteria innominata, and the aorta adjacent to this part is generally dilated. The sac, the mouth of which is more than two inches in diameter, projects forwards and to the right side, nearly filling the upper part of this side of the chest, and making its way far forwards by producing absorption of large portions of the first, second,

and third ribs, and of the side of the sternum. Portions of these bones, rough and ulcerated, project across the interior of the sac; above, it is in contact with the clavicle; in front, it projected several inches beyond the ribs; and there is an aperture in its posterior wall, through which, probably, it burst.

*Hunterian.*

3465. Part of a chest, with a very large aneurism of the arch of the aorta. Many of the great blood-vessels are injected. The whole length of the arch of the aorta is greatly dilated; it measures at one part three inches and a half in diameter, and is nearly seven inches in length; its coats are thickly beset with deposits of earthy matter. The aneurism arises from the most dilated part of the arch, that is, from its upper and anterior wall, just in front of the origins of the brachio-cephalic trunks. Making its way forwards and upwards, it has produced absorption of the upper third of the sternum, and of the cartilages and ends of the first three ribs on both sides. Within the chest the sac is four inches in diameter; it is constricted where it passes through the sternum; but beyond this it is enlarged to a diameter of five inches and a half, and projects three inches beyond the walls of the chest. In its upper part there is a large aperture, through which it burst, after sloughing of the skin. The clots in Nos. 1670-1-2 were taken from this aneurismal sac.

The history of the case is in vol. iii., p. 254.

*Hunterian.*

3466. Part of a chest and spine, with a great aneurismal sac connected with the thoracic and abdominal portions of the aorta. The other portion of the aorta with the mouth of the sac is preserved in No. 1645. The rest of the sac, preserved in this preparation, is of an oval form, and measures nine inches and seven inches in its chief diameters. Projecting downwards and backwards, it has produced absorption of parts of the last two ribs on the left side, and of the last four dorsal and the first lumbar vertebræ. The portions of aorta above and below the sac have been injected, and, like the portion from which the sac projected, appear quite healthy.

*Hunterian.*

3467. Parts of a chest and spine, with two large aneurisms of the aorta. One, arising from the upper and back part of the first portion of the thoracic aorta, and making its way backwards, has destroyed the left sides of the first five dorsal vertebræ, and the adjacent parts of the third, fourth, and fifth left ribs, and has widely laid open the vertebral canal. The other, formed by a nearly equal dilatation of the whole circumference of the lower part of the thoracic aorta, and the upper part of the abdominal, has destroyed portions of the bodies of the last three dorsal vertebræ. Both the sacs have an elongated oval form, and are between five and six inches in length. The portion of aorta between them is dilated, but the portions before the first sac and beyond the second are of ordinary size.

3468. An heart and aorta. The whole length of the trunk of the aorta, from the situation at which the ductus arteriosus is attached to it, to within two inches of its bifurcation, is enormously dilated. It measures from two inches and a half to four inches and a half in diameter, and has in several places large pouches projecting beyond it. Its coats, also, are very thick, and have fatty and earthy matter abundantly deposited in them. The heart is enlarged. The part of the aorta between the heart and the junction of the ductus arteriosus is somewhat above the average size; at and about that junction, just before the beginning of the great dilatation, it appears to have been contracted. There is a large aperture leading through a part of the left pleura into the upper part of the dilated aorta, as if the aneurism had burst there.

*From the Museum of Sir A. P. Cooper.*

3469. Parts of a femoral artery and vein, injected and dried, together with a portion of a very large aneurismal sac, which was situated in the upper part of the thigh. *Hunterian.*

3470. A large popliteal aneurism, dried, in connection with all the adjacent parts. The popliteal and other veins are dilated, and adhere to the posterior surface of the sac. *Hunterian.*

3471. The knee-joint of a person on whom an operation for popliteal aneurism had been performed with success. Nothing remains of the aneurism or the popliteal artery; but they may have been removed after death.

*Hunterian.*

3472. The remains of the popliteal aneurism, for which Mr. Hunter first performed his operation of applying a ligature at a distance from the sac. The obliterated femoral artery and the femoral vein are preserved in connection with the remains of the sac.

The following account of the case is from Sir Everard Home's "Account of Mr. Hunter's Method of performing the Operation for the Cure of the Popliteal Aneurism," in the "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge," vol. i., 1793, p. 147:—

"The patient was a coachman, forty-five years of age: he was admitted into the hospital in December, 1785, with a popliteal aneurism, which he had first perceived three years previous to his admission, and had observed it gradually to increase during the whole of that period.

"It was so large as to distend the two ham-strings laterally, and make a very considerable rising between them; the pulsation was very distinct, and to be felt on every side of the tumour. The leg and foot of that side were so swelled as to be much thicker than the other, and were of a mottled brown colour; the swelling was not of the oedematous kind, but felt firm and brawny, probably from the extravasation of coagulable lymph; the leg retained its natural shape, excepting that it was larger.

"Previous to performing the operation, a tourniquet was applied upon the upper part of the thigh, but not tightened, that the parts might be left as much in their natural situation as possible.

"The operation was begun by making an incision on the anterior and inner part of the thigh, rather below its middle, which incision was continued obliquely across the inner edge of the sartorius muscle, and made large, to give room for the better performing of whatever might be thought necessary in the course of the operation. The fascia which covers the artery was then laid bare about three inches in length, after which the artery itself was plainly felt. A slight incision, about an inch long, was then made through this fascia, along the side of the vessel, and the fascia dissected off: by this means the artery was exposed.

"Having disengaged the artery from its lateral connections by the knife, and from the other adhering parts by the help of a thin spatula, a double ligature was passed behind it, by means of an eyed probe.

"The doubling of the ligature brought through by the probe, was cut so as to form two separate ligatures.

"The artery was now tied by both these ligatures, but so slightly, as only to compress the sides together.

"A similar application of ligature was made a little lower. The reason for having four ligatures, was to compress such a length of artery as might make up for the want of tightness, it being wished to avoid great pressure on the vessel at any one part. The ends of the ligatures were carried directly out at the wound, the sides of which were now brought together, and supported by sticking-plaster and a linen roller, that they might unite by the first intention.

"The limb was found, some hours after the operation, not only to retain its natural heat, but even to be warmer than the other leg. The second day after the operation, the brawny firmness of the leg was considerably diminished; it was become soft, loose, and a good deal smaller, and the aneurismal tumour had lost more than one-third of its size.

"Nothing could show more plainly the action of the absorbents than the change the leg had undergone in so short a time; the diminution of the tumour probably arising from the fluid blood which it contained having passed into collateral branches, or into the tibial artery.

"The fourth day, on the removal of the dressings, the edges of the wound were found united through its whole length, excepting where prevented by the ligatures; there was neither pain nor tumefaction in the part, but the aneurismal tumour was the same as on the second day.

"On the ninth day after the operation there was a considerable discharge of blood from the part where the ligatures passed out. A tourniquet was therefore applied on the artery above, which stopped the bleeding; and although the tourniquet was taken off a few hours after, no blood followed. The head of a roller was then placed upon the wound, in the direction of the artery, and over that the tourniquet, which was not, however, tightened more than was thought sufficient to take off the impetus of the blood in that portion of the artery.

"On the tenth day appearances were much the same, only that between the compress and the knee there appeared a little fullness, like beginning inflammation. On the eleventh day this was gone off, and on the fifteenth some of the ligatures came away, followed by a small discharge of matter, the tumour in the ham being lessened. On the seventeenth day, the parts surrounding the aneurismal tumour were more reduced and pliable, so that it was distinctly to be felt.

"About the latter end of January, 1786, six weeks after the operation, the patient went out of the hospital, the tumour at that time being somewhat lessened, and rather firmer to the feel. He was ordered to come to the hospital once every week, and, in the mean time, to make some degree of pressure, by application of a compress and bandage, with a view to excite the absorbents to action, which in most cases has a good effect.

"About the middle of February the tumour had decreased, and was become still firmer. March the 8th, the wound, which had cicatrized, broke out again, and the patient was taken into the hospital. About the 8th of April, some of the remaining thread of the ligature came away, and an inflammation appeared upon the upper part of the thigh. In the middle of May, a small abscess broke at some distance from the old cicatrix, at which opening some matter was discharged, but no pieces of ligature



were observed. Several small threads were, at different times, discharged from the old sore, and the swelling subsided; but the thigh soon swelled again to a greater size than before, attended with considerable pain. In the beginning of July, a piece of ligature, about one inch in length, came away, after which the swelling went off entirely, and he left the hospital the 8th of July, at which time there remained no appearance of tumour in the ham, he being in every respect well.

"After leaving the hospital, the man returned to his usual occupation of driving a hackney-coach, and being, from the nature of his employment, much exposed to cold, in March, 1787, he was seized with a fever of the remittent kind, which carried him off. He had not made any complaint of the limb on which the operation had been performed, from the time of his leaving the hospital.

"He died on the 1st of April, 1787, fifteen months after the operation, and leave was procured, with some trouble and considerable expense, to examine the limb seven days after death, at which time it was entirely free from putrefaction.

"The cicatrix on the anterior part of the thigh was scarcely discernible, but the parts under it felt hard. The ham had no appearance of tumour, and was to the eye exactly like that of the other limb; there was, however, a solid tumour perceptible to the touch, filling up the hollow between the two angles of the thigh bone.

"The femoral artery and vein were taken out above the giving off the branch called profunda, and a little below the division into the arteriæ tibiales et interossea. The arteries and veins that were pervious being injected, the whole was carefully dissected.

"The femoral artery was impervious, from its giving off the arteria profunda as low as the part included in the ligature, and at that part there was an ossification for about an inch and a half along the course of the artery, of an oval form, the rim of which was solid, becoming thinner towards the centre, and not bony, but ligamentous. Below this part the femoral artery was pervious down to the aneurismal sac, and contained blood, but did not communicate with the sac itself, having become impervious just at the entrance.

"What remained of the aneurismal sac was somewhat larger than a hen's egg, but more oblong, and a little flattened, extending along the artery below for some way, the blood pressing with greater force in that direction, and distending that part so as in some measure to give the appearance of a separate bag. The sac was perfectly circumscribed, not having the smallest remains of the lower orifice into the popliteal artery. Whether this arose from the artery being pressed upon by the inferior portion of the sac, as appears to be the case in common, or was in consequence of the sac contracting after the operation, I will not pretend to determine; but it contained a solid coagulum of blood, which adhered to its internal surface.

"A section made of this coagulum appeared to be composed of concentric lamellæ, uniform in colour and consistence.

"The popliteal artery, a little way below the aneurismal sac, was joined by a small branch, very much contracted, which must have arisen either from the profunda, or the trunk of the femoral artery. About two inches below the sac, the popliteal gave off, or divided into, the tibiales.

"The profunda was of the usual size, but a good deal ossified for some length after

leaving the femoral artery: the two tibials, where they go off from the popliteal, were in the same state.

“The trunk of the femoral vein, where it passed along the side of the tumour, must have been obliterated; for at this part it appeared to send off three equal-sized branches, passing over different parts of the aneurismal sac: these must have been dilated branches, none of them having the course which the trunk of the vein should have pursued.

“These appearances throw some light upon the changes which took place in the limb after the operation. The ligature upon the femoral artery impeded the passage of the blood into the sac, so much as to allow its contents to coagulate, and render the opening into it from the artery impervious. By this a stop was only put to the increase of the tumour; its reduction to the size met with in the dead body must have been the effect of absorption.

“The conclusion to be drawn from the above account appears a very important one, viz., that simply taking off the force of the circulation from the aneurismal artery is sufficient to effect a cure of the disease, or at least to put a stop to its progress, and leave the parts in a situation from which the actions of the animal economy are capable of restoring them to a natural state.”

*Hunterian.*

3473. The femoral arteries of a man, who died with popliteal aneurism at St. George's Hospital. *Hunterian.*

### 3. *Obliteration of Arteries.*

3474. A left upper extremity, with its arteries injected, and dried. The first portion of the axillary artery, through a length of nearly two inches from the clavicle, is obliterated; its canal then gradually widening, acquires its natural size at the origin of one of the branches to the pectoralis major muscle. The subscapular artery and its branches are of large size, and a considerable anastomosis is shown between one of them and the supra-scapular artery beneath the acromion. *Hunterian.*

3475. Part of a chest, with the arch of the aorta and its branches injected and dried. In the right subclavian artery the injection has passed only to a short distance beyond the origin of the vertebral artery. At this part the

canal of the artery is obliterated: a flattened cord was continued hence to the trunk of the axillary artery; but just above the obliterated part a large branch is given off, which proceeds in a direction towards the axilla, and by which probably the circulation was in some measure maintained.

*From the Museum of John Taunton, Esq.*

- 3475A. The right arm of the person from whom the last-described specimen was taken, dried after the injection of its arteries. The supra-scapular and subscapular arteries and their branches upon the scapula are unusually large; the arteries of the arm are of ordinary size. The obliteration appears to have extended to the middle of the axilla.

These parts were taken from a woman about thirty years old, of whose history nothing is known except that she died with extensive disease of both lungs, and enlarged and calcified glands in the abdomen and mediastinum. No cause of the obliteration of the artery could be found: it appeared to be simply contracted. The corresponding part of the left axillary artery was contracted, and its coats were thickened. The glands in the left axilla also were enlarged and full of calcareous matter.

*From the Museum of John Taunton, Esq.*

### SERIES LXXIII.—DISEASES OF THE LUNGS.\*

3476. Lungs, of which the air tubes and cells have been injected with wax and dried. Several large emphysematous portions are shown standing out beyond the rest of the surface of the lung, with smooth pale surfaces and rounded borders.

*Hunterian.*

\* Corresponding with Series XXXVII., vol. iv., p. 1.

SERIES LXXIV.—DISEASES OF THE KIDNEYS.\*

3477. Two kidneys, with their pelves and ureters, and the urinary bladder, injected with wax and dried. The pelves and ureters are greatly dilated, and the kidneys appear sacculated, but are not enlarged. *Hunterian.*
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SERIES LXXV.—DISEASES OF THE MEMBRANES OF THE  
BRAIN.†

*Conditions of the Skull accompanying and consequent on Hydrocephalus.*

3478. The upper part of the skull of a child, eleven years old, who died with acute hydrocephalus, after all the sutures were closed. On the right side the coronal suture is a very little open, and the dentations of the margins of the bones are elongated. The skull is very thin, and its internal surface is so deeply impressed by the cerebral convolutions, that it is in some situations nearly perforated.

*Presented by Edmund Sheffield, Esq.*

3479. The cranium of an hydrocephalic child. The parietal bones are enlarged, as are also those parts of the frontal and occipital which form portions of the vault of the skull. The two lateral portions of the frontal are not united, except at their lower part; but on the right side the frontal and parietal bones are united, and there is scarcely a trace of coronal suture at their junction. At the situation of the sagittal suture, and at the left half

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\* Corresponding with Series XXXIX., vol. iv., p. 40.

† Corresponding with Series XLII., Appendix A., vol. iv., p. 137.

of the coronal, the bones are wide apart: at the other sutures there is no separation. *Hunterian.*

3480. The skull of an hydrocephalic child. The bones forming the vault of the skull are enlarged and widely separated. There are numerous small isolated bones (ossa Wormiana) in the course of the usual situation of the sagittal and lambdoidal sutures, and one of very large size near the posterior and inferior angle of the right parietal bone. The cranial is not united to the basilar portion of the occipital bone. Neither the basilar portion of the occipital bone, nor any part of the temporal bones, is enlarged. The whole length of the frontal suture is open. *Hunterian.*
3481. The upper part of the skull of an hydrocephalic child, with all the sutures widely open, and numerous apertures in the parietal bones where the ossification has not kept pace with the expansion of the head. There is a small aperture also in each half of the frontal bone. The arrangement of nearly all these apertures is symmetrical. *Hunterian.*
3482. The upper part of an hydrocephalic skull, with enlargement of all the bones, elongation of the processes for the formation of the sutures at their margins, and rows of isolated bones in the unclosed sagittal and coronal sutures.
3483. The upper part of an hydrocephalic skull, in which nearly all the enlargement is obtained by an increase of size of the bones and of the anterior fontanelle. The sagittal suture and the lower parts of the coronal suture are united.
3484. A similar specimen, with the addition of numerous large apertures in the parietal bones, and a few of smaller size in the frontal.
3485. A similar specimen, with much greater enlargement, and more irregular ossification of the several bones. The left parietal bone has grown at one part rather beyond the median line, but the right parietal has not approached within two inches of it. *Hunterian.*

3486. A similar but yet larger specimen, with large and less symmetrical apertures in all the bones. The margins of the several bones have grown towards the vault of the skull without any regularity, and are bounded by numerous detached small Wormian bones. *Hunterian.*

3487. Part of the skull of an hydrocephalic child. The plan and progress of ossification, and the manner in which the bones are united, are exceedingly irregular. All the bones are very large, and the parts at which they are not united are near the ordinary situations of the parietal bones, where (the soft parts having been completely removed) there are two large deficiencies in the skull, each nearly six inches long and four inches wide. The parietal bones themselves are pressed backwards and downwards; they are strangely misshapen, and are united with the frontal, temporal and occipital, and with bone developed along the median line, so that there is hardly any trace of suture among them. Along the whole of the middle line of the vault of the skull the ossification has been carried to excess. There passes in that line, from the lower part of the frontal bone, between its two lateral and widely separated halves, to the upper part of the occipital bone, an arch of bone, an inch and a half wide, and, in the situation of the attachment of the falx, nearly three-quarters of an inch thick. The lateral portions of the frontal bone are very widely separated, leaving a broad vacant space in the middle line; and they appear to have completely united with the malar bones and the great alæ of the sphenoid, the orbits being pushed far outwards and downwards: but it is, perhaps, impossible to say of what bones the parts of the skull here situated within the zygomata are composed. Apparently in consequence of the pressure of the sides of the skull outwards and downwards, the zygomatic process of the left temporal bone is flattened out into a thin plate, half an inch in width. (On the right side the corresponding process is broken off.) There must have been a considerable enlargement of the base, as well as of the vault, of the skull, for the glenoid cavities are five inches apart. *Hunterian.*

3488. A skull from Otaheite, enlarged in consequence of hydrocephalus. It



measures twenty-five inches in circumference transversely, eighteen inches over the vertex from one meatus auditorius externus to the other, and twenty-one inches from the nasal spine of the frontal bone over the vertex and occiput to the foramen magnum. Its ossification is complete, and all the sutures are closed. A row of Wormian bones is placed, with a nearly symmetrical arrangement, in the lambdoidal suture: there are few in the squamous sutures, and one symmetrically placed on each side in the coronal suture; but none of them are of large size. The forehead, occiput, and parietal protuberances, are prominent. The face is of ordinary size; the orbits are small.

By the state of the teeth, the patient may be judged to have been between fifteen and twenty years old.

*From the Museum of John Taunton, Esq.*

3489. The skeleton of a man, who died with hydrocephalus at the age of twenty-five years. The skull, though enormously enlarged, is completely ossified. Its greatest horizontal circumference is thirty-six inches; from the nasal spine, over the vertex in the median line to the border of the foramen magnum, it measures twenty-eight inches; and from one meatus auditorius externus to the other, transversely over the vertex, twenty-eight inches. From the nasal to the coronal suture is eight inches and a quarter; and the diagonal of the right parietal bone is ten inches and a half.

The skull is not enlarged regularly: there are unnatural prominences at the upper and back part of the left parietal bone, and at the lower and fore part of the right parietal, which give the whole skull an oblique unsymmetrical form. Besides the enlargement of the frontal and parietal bones, by which the greater part of the enlarged cranial cavity is formed, rows of Wormian bones, from an inch to four inches and a half in breadth, are placed in the whole course of the lambdoidal and sagittal sutures, and in great part of the length of the squamous sutures. In the lambdoidal suture numerous small bones make up the row: in the sagittal suture, even at the widest part, the bones are single. All these Wormian bones are united together, and to the margins of the adjacent bones; and at the

anterior part of the sagittal suture their union is so close that the line of suture can hardly be discerned.

There is scarcely any enlargement of the base of the skull; it measures, from one meatus auditorius externus to the other, four inches and two-thirds. The squamous portions of the temporal bones, and the ascending portion of the occipital bone, are slightly enlarged, though they are as thin as the parietal and frontal.

The bones of the face are large and thin, and it is of unnatural width (measuring five inches between the outer margins of the orbits), in consequence of the malar and inferior maxillary bones being carried outwards with the temporal bones. The ramus of the inferior maxillary bone is especially carried outwards on the right side, in consequence of the great prominence already mentioned of the adjacent parts of the right parietal and temporal bones. The apertures of the orbits are very large, but their cavities are shallow. The teeth are large and well arranged.

All the bones of the trunk and limbs are very light. In the dorsal region the spine is curved sharply towards the right side: it is less curved in the opposite direction in the lumbar region, in which also the bodies of the vertebræ are turned towards the left side, so that both they and the pelvis look obliquely outwards. The chest is contracted on the right side, and in a corresponding degree enlarged on the left side. The pelvis is similarly distorted: its antero-posterior axis, like that of the chest, is very oblique, and the right os innominatum is higher and smaller than the left. The right shoulder is elevated by the distortion of the spine. All the bones of the upper extremity are remarkably light and slender, but they are of the ordinary length and form. The bones of the lower extremities are in the same state, or even more atrophied. The circumference of the largest part of the femur is two inches and one line, that of the tibia one inch and two-thirds. The left femur was occasionally dislocated, and its head, which rested in a shallow cavity on the os pubis, directly in front of the anterior superior spine of the ilium, is irregularly flattened and ulcerated at its posterior part. The right femur also was occasionally dislocated on the dorsum of the ilium, where a similar depression exists at the part on which it rested. The lesser trochanters

and the lineæ asperæ are unnaturally prominent. The shafts of the thigh-bones are turned obliquely to the left side; the knees are flexed. Near the left ankle-joint a thin plate of bone extends between the adjacent margins of the tibia and fibula. The left foot is unnaturally arched and turned outwards.

*From the Museum of Robert Liston, Esq.*

3489A. The skeleton of a boy, twelve years old, showing effects of hydrocephalus and rickets. The skull is of almost globular form, and nearly symmetrical. It measures, in its transverse circumference, thirty-one inches; from one meatus auditorius externus to the other, over the vertex, twenty-seven inches; and from the nasal spine to the foramen magnum, twenty-six inches. The increase in the size of the skull is obtained, chiefly, by the enormous enlargement of the frontal and parietal bones; and these bones are united together, and, through the medium of rows of numerous Wormian bones, to the temporal and occipital bones; so that the walls of the skull are almost wholly osseous, and the sutures are only obscurely visible. At the top of the skull, however, a large aperture remains on each side, closed only by membrane. Between these apertures, and extending over the vertex of the skull from before backwards, a plate of bone, nearly two inches wide, unites the frontal bone with the occipital, and with the portions of the parietal bones that have coalesced in the median line.

The bones composing the distended portion of the skull are from one-tenth to one-third of an inch thick; the frontal bone is thinnest: the parietal bones are thickest; the texture of all of them appears nearly healthy, but their outer surface is, in some situations, rough and granulated.

The bones of the base of the skull are slightly enlarged, especially in their width. Most of their sutures appear to be closed. The bones of the face are widened, in adaptation to the increased width of the base of the skull, and the pushing asunder of the squamous parts of the temporal bones. The orbits are depressed, their upper walls being in an almost continuous plane with the forehead.

The spine presents a double lateral curvature, and the scapulæ, humeri, femora, tibiæ, and fibulæ present, in an extreme degree, the shortness and

distortion characteristic of rickets. All these bones are soft, light, and greasy; and the left humerus and ulna, the right radius, both femora, and the left tibia, appear to have been at distant periods fractured and repaired, with various degrees of distortion.

The pelvis also is remarkably deformed. The lower half of the sacrum is turned nearly straight forwards; the acetabula are approximated to within half an inch of each other, and the ossa pubis, thence extending forwards in nearly parallel lines to their symphysis, give the pelvis a peculiar *beaked* form. The tubera and spines of the ischia, also, pressed inwards behind the sacrum, approach within half an inch of one another.

The specimen is described in the "Commentationes Regiæ Societatis Göttingensis," 1826, and in the "Beiträge zur Anatomie und Physiologie," by E. A. W. Himly.

*From the Museum of Professor Himly.*

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#### SERIES LXXVI.—DISEASES OF THE OVARIES.\*

3490. An ovarian cyst dried. It measures four feet in circumference in one direction, and three feet in another. It is a single cyst, but slightly constricted, with an imperfect partition near its middle. Large blood-vessels ramify upon its surface.

The history of the case is recorded by Mr. P. M. Martineau, surgeon to the Norfolk and Norwich Hospital, in the Philosophical Transactions for 1784, vol. lxxiv., p. 471.

The patient was twenty-seven years old when the disease commenced, after a miscarriage of her first child. Between the year 1757 and August 1783, when she died, she underwent the operation of tapping eighty times; and in these operations there were, altogether, removed from her 6631 pints of fluid, or upwards of thirteen hogsheads. "One hundred and eight pints was the largest quantity ever taken away at one time; she was never tapped more than five times in one year, and the largest quantity in a year was four hundred and ninety-five pints. The most fluid collected in

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\* Corresponding with Series LV., vol. iv., p. 289.

the shortest space of time was ninety pints in seven weeks, from July 24 to September 10, 1780, which is very nearly two pints a day.

"On the 10th of August, 1783, the poor woman died. On the following day, on opening the body, seventy-eight pints of clear fluid were drawn off: supposing, therefore, all the fluid to have been taken at the last operation, then in three weeks she had collected seventy-eight pints, which is more than three pints and a half each day—a quantity far exceeding what she had taken.

"The disease was situated in the left ovarium.

"The sac is in the collection of John Hunter, Esquire."

3491. An ovarian cyst, nearly as large as that last described.

3492. An ovarian cyst, the walls of which are almost completely ossified. The formation of bone appears to have commenced at numerous distinct points in the membrane of the cyst, from which extending, several thin round plates, somewhat like the bones of a foetal head, have been produced, and these in many places have coalesced at their margins, or are connected by narrow processes extending from one to the other. The cavity of the cyst is single; it measures seven inches in diameter.

## SERIES LXXVII.—ANATOMY OF STUMPS AFTER AMPUTATIONS OF LIMBS.\*

### 1. *Stumps with New Bone deposited on them.*

3493. The stump of a femur. The end of its medullary cavity is closed with a thin layer of bone; its margins are smoothly rounded, and just above them new bone has been formed, which projects behind the linea aspera in long and narrow spines. The orifices of the vascular canals are larger than natural in nearly all the shaft. *Hunterian.*

\* Corresponding with Series LXI., vol. iv., p. 344.

3494. The upper part of a fibula, after amputation. A narrow process of bone, pointed upwards, has grown from its inner margin near its extremity.

*Hunterian.*

3495. The stump of an eagle's humerus, with a knob of new bone on its extremity.

*Hunterian.*

3496. The ulna of a cat, from which the distal end has been removed, and at the proximal the extensor tendons are fixed by ossification to the olecranon.

*Hunterian.*

3497. Part of the tarsal bone of a turkey, the end of which was removed. Its stump is reduced in size, and covered with thin osseous matter. The long tendon-like bones by which the muscles were inserted are united to the end of the stump.

*Hunterian.*

## 2. *Atrophy of Stumps.*

3498. The stump of a tibia, from a case in which it was necessary to amputate so high up that a part of the ligamentum patellæ was cut through. The stump has healed roundly and very smoothly; a complete layer of compact bone covers the sawn surface of the cancellous texture, but the whole of the bone is very light.

*Presented by Sir Anthony Carlisle.*

3499. The stump of a tibia. The cancellous tissue has been completely removed from its interior, leaving a single large cavity, which opens by a wide orifice at the upper and posterior part of the bone, and by a smaller one at its lower end. Probably both these holes were broken-in after death.

*Hunterian.*

3500. The stumps of a tibia and fibula. Both the bones are reduced in size,



tapering towards their extremities, where a small quantity of new bone is formed on the tibia, but the fibula ends in a sharp point. The articular head of the tibia alone appears to have retained its natural size.

*Hunterian.*

3501. A similar specimen, except that the fibula is bent inwards at its extremity, and united by bone to the end of the tibia. *Hunterian.*

3502. The stump of a fibula, after amputation near the knee-joint, reduced in size, and tapering to its extremity. *Hunterian.*

3503. A similar specimen, with some new bone formed around its extremity. *Hunterian.*

### 3. *Inflamed and Ulcerated Stumps.*

3504. The stump of a tibia, after amputation very near the knee-joint. The end of the stump is much reduced in size, and its anterior surface is covered with new bone, which is very light and cancellous near the end, but more compact and laminated near the knee-joint. *Hunterian.*

### 4. *Necrosis of Stumps.*

3505. Portion of a tibia, of which one extremity perished, and is separated from the adjacent living bone by a shallow groove. The groove is continued for a short distance upwards, but the upper boundary of the dead bone is not distinct. The surface of the living bone is ulcerated, and in two situations covered by a thin layer of new bone. *Hunterian.*

3506. The upper part of a femur, in which, after amputation through the lower part of its shaft, a narrow ring of the end of the stump perished.

The dead bone is separated from the living by a deep groove, which extends in an irregular line around the shaft. The rest of the shaft was very vascular. *Hunterian.*

3507. Portion of a tibia, from one end of which (apparently after amputation) a considerable exfoliation was taking place. The adjacent part of the shaft has new bone abundantly formed on its surface. *Hunterian.*

3508. The upper part of a femur, in which necrosis ensued after amputation through the middle of its shaft. The upper boundary of the dead bone is not distinct. The shaft, for about four inches above its extremity, is superficially ulcerated, and still higher up is perforated with numerous minute apertures for enlarged blood-vessels. *Hunterian.*

3509. Part of a femur, of which the end perished after amputation through the middle of the shaft. The greater part of the ring of dead bone has exfoliated. Immediately above and around the seat of the exfoliation a large quantity of new bone has been formed; and a thin layer of it extends up the exterior of the shaft. *Hunterian.*

3510. Part of a femur, from the end of which an annular portion exfoliated after amputation. The extremity is smooth but porous, like ulcerated cancellous tissue: there is a cavity in its centre, and it is surrounded with a small quantity of new bone. *Hunterian.*

3511. Part of a femur, from the end of which portions exfoliated after amputation. The necrosis seems to have affected only parts of the wall, for the cancellous tissue remains entire in the midst of the cavities from which the sequestra were removed. New bone has been formed abundantly on all the remaining part of the shaft. *Hunterian.*

3512. The stump of the last phalanx of an amputated finger. A sequestrum appears to have been separated from part of its anterior surface, and above this part a thin layer of porous new bone is deposited on it. *Hunterian.*

3513. Part of a tibia in which, after amputation, a portion of the wall, seven inches long, perished, and was in process of separation. New bone has been abundantly produced upon the living portion of the shaft near that which perished. *Hunterian.*

3514. The stump of a femur, in which necrosis and ulceration has extended through nearly ten inches of the anterior part of the shaft, reaching almost as far as the trochanter. The boundary of the dead bone is not marked; where the bone is not dead or ulcerated, new bone is abundantly deposited on its surface. The whole of the bone above the chief seat of disease appears also to have been unnaturally vascular.

*Presented by Sir William Blizard.*

3515. The stump of a femur, in which a portion of the end of the shaft, five inches long, and including about half its circumference, perished. The sequestrum lies loose in a thick-walled cavity of new bone, formed on the remains of the walls of the shaft. The new bone has been especially produced in front, where it forms a thick smooth layer: behind, it is less in quantity, and has several large round ulcerated apertures in it.

*Presented by Sir William Blizard.*

3516. A similar specimen, but the dead portion of bone is larger, comprising the whole circumference of the shaft, and is not yet completely separated. The new bone also is less abundant and less compact.

*Presented by Sir William Blizard.*

3517. A similar specimen. The sequestrum, about seven inches long, including at its lower part the whole circumference of the shaft, and gradually tapering to its upper end, is completely separated, and lies loose in an imperfect case of new bone formed on those parts of the old wall of the shaft which did not perish.

*Presented by Sir William Blizard.*

3518. A similar specimen, with two large separated sequestra. In this, as in

the preceding specimens, the anterior part of the case of new bone is complete; but there are many large apertures in the posterior part.

*Presented by Sir William Blizard.*

3519. Nine large sequestra, exfoliated after amputations of thighs. They all include the whole, or nearly the whole, of the shaft at their sawn extremities, and all become smaller higher up. They all include less of the medullary tissue than of the walls of the shaft. There are deposits of new bone on the surfaces of some of them. *Hunterian.*

3520. Two similar sequestra, from the ends of humeri after amputations. Each of them includes nearly the whole thickness of the shaft, and is upwards of five inches long.

*Presented by Sir William Blizard.*

## ADDENDA

To No. 218, vol. i., p. 97.—The tumour from the Right Hon. W. Wyndham was presented to the Museum at his own request.

To No. 467, vol. ii., p. 52.—The fracture occurred between twenty and thirty years before the patient's death.

To No. 1377, vol. iii., p. 144.—The piece of intestine was passed thirteen years before the patient's death. The specimen was presented by John Valentine, Esq.

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## CORRIGENDA.

Vol. i., p. 32, line 5, *for weeks read months.*

„ i., p. 104, line 15, *for Epitheliel read Epithelial.*

„ ii., p. 113, line 7, *for three read four.*

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